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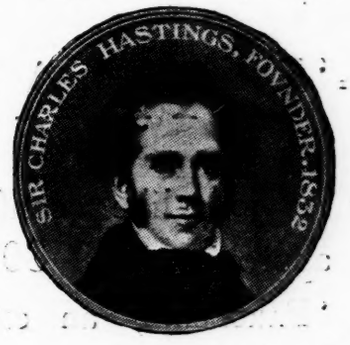

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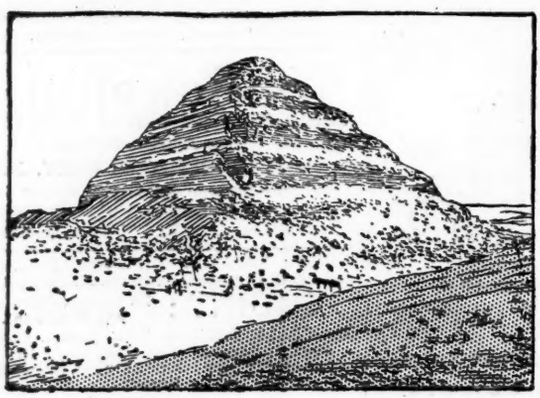
THE FIRST PYRAMID.—The building of this pyramid marks the beginning of architectural development in ancient Egypt, and King Tjeser (Tcheser, Zeser, Zaser) who built it, became the pioneer who showed the way to the great Pyramid Builders of the next dynasty, about 100 years later. It is recorded of him as a marvel that "he built a house of hewn stones." Royal tombs had hitherto been built of sun-dried bricks, the only instances of the previous use of stone being one granite floor and a limestone chamber. In construction the "stepped pyramid" is transitional from the earlier mastaba (or low-walled tombs) to the true pyramid. It is a huge rectangular structure built in steps to a height of about 195 feet, measuring at the base 351 feet, from north to south and 395 feet from east to west; it is inaccurately oriented, the northern face deviating 4° 21′ E. of true north. The blocks are of limestone quarried in the neighbourhood; they are small and badly cut, but the facings are carefully dressed. The courses of masonry are concave, in order, in some measure, to counteract the downward pressure and to resist earthquake shocks. The pyramid itself is solid, the chambers and galleries being cut in the rock beneath. Two of the chambers and a doorway are lined with glazed tiles, once attributed to a later date on account of the difficulty of believing such work possible at so early a period, but now considered to be of the date of construction, since glazed tiles are proved to have been made by the Egyptians even before the first dynasty. The work of contemporary Mesopotamians shows nothing that can be compared with that of the Egyptians, who were the first great architects and builders in the world.



Date: 3rd Dynasty ending (some authorities), c. 4650 B.C.
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Hunterian Lecture

ON THE

NATURE AND CAUSE OF OLD-AGE ENLARGEMENT OF THE PROSTATE.*

BY

PROFESSOR KENNETH M. WALKER, M.A., M.B., F.R.C.S.,

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THERE are few problems in medicine that have attracted more attention or given rise to a greater diversity of opinion than the problem of the nature and cause of enlargement of the prostate. One has only to glance through medical literature since the first reference to the subject by Nicola Massa, a Venetian physician of the sixteenth century, to realize how much research has already been expended on this subject and how little we really know concerning the genesis and pathology of the condition. In venturing, therefore, to make it the subject of my lecture on this, the second occasion that you have done me the honour of inviting me to address you, I would claim your special indulgence. Far abler investigators than myself have failed to throw any fresh light on this subject. In my humble opinion their failure has not infrequently been due to the fact that they have viewed the problem from too narrow an angle—as a surgeon, as a pathologist, or as an anatomist, as the case might be. For this reason I have tried to stand further back from my subject and to take as wide a view of it as possible, in the hope that where my investigation might fail in depth of vision it would gain in breadth. I have even included in its scope a consideration of enlargement of the prostate occurring in animals other than man, and an investigation of its incidence amongst the various races of the world. I have done this not only because I believed it to be the best method of tackling the subject of prostatic enlargement, but also because I am convinced that it is the manner in which all research should be pursued. The days of working in watertight compartments are over, and if in the future we are to continue making progress there must be a closer liaison not only between medicine, surgery, and pathology, but also between these and the kindred sciences of comparative anatomy, anthropology, and veterinary surgery.

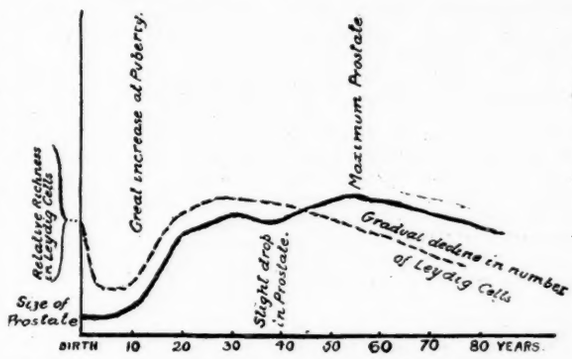

FIG. 1.—Curve showing average size of prostate at various ages (thick continuous line) and prominence of Leydig's interstitial cells (interrupted line).

The Frequency of Prostatic Enlargement.

Before going further into the subject it is advisable to lay down clearly that I propose to limit my inquiries to the investigation of only one type of enlargement of the prostate—the glandular, or what is commonly known as the adenomatous prostate. Of inflammatory enlargements of the fibrous type, and of carcinoma, I shall say little or nothing.

The first point to strike anyone who conscientiously examines prostates, whether his examination be made in the *post-mortem* room or in the out-patients' department, is the frequency with which some degree of enlargement occurs after the age of 50 has been reached. This, of course, is more obvious in the *post-mortem* room than in the out-patients' department, for it is only by means of such special examinations as cystoscopy and posterior urethroscopy that many of the lesser degrees of enlargement can be diagnosed during life. As an indication of the commonness with which this increase in the size of the prostate occurs after the age of 50 I have produced a curve which represents the size of the prostate in the various decades of life. (Fig. 1.) This curve has been constructed mainly from data supplied by Lowsley in his extensive work on the size and form of the prostate from birth to old age. It will be seen from the curve that the maximum size is reached somewhere about the age of 60. After this period there is a slow diminution in size with the advent of senility. It may therefore be accepted that some degree of enlargement after the age of 50 is the rule rather than the exception. This fact has been emphasized by such writers as Sir Astley Cooper, and notably by Sir Benjamin Brodie, who wrote:

"When the hair becomes grey and thin, when atheromatous deposits invade the arterial walls, when there is formed a white zone about the cornea, at the same time ordinarily, I dare say invariably, the prostate increases in volume."

However, although this is so, it must be remembered that only a percentage of those whose prostates show enlargement suffer any disability therefrom. There is no direct relation between the degree of enlargement and the severity of the symptoms. It is indeed by no means rare to find in the *post-mortem* room a prostate weighing as much as 40 grams, which has not produced any symptoms during life.

What is still more interesting is the fact that enlargement of the prostate during the latter part of life is by no means a prerogative of the human race. Of its incidence amongst domestic animals I cannot yet speak with any degree of certainty, owing to the difficulty I have encountered in obtaining specimens of uncastrated animals dying of old age. Amongst dogs, at any rate, it is extremely common, and, as old dogs are easily obtained, much of my work has been done on that animal. However, from the material which has been put at my disposal by the courtesy of the Veterinary College and the Zoological Society, I believe there to be a general tendency throughout the whole animal world towards enlargements of the secondary sexual glands in old age.

The Nature of the Enlargement.

Not only are we in complete ignorance as to the causes underlying enlargement of the prostate, but we are in doubt as to the nature of the enlargement itself. Is it a hyperplasia following previous inflammation, or is it in the nature of a neoplasm? The most convenient method of dealing with the subject will be to pass under review the theories of enlargement which have at various times been put forward, and to see whether they fit in with ascertained facts. These theories may be considered under three headings:

1. The inflammatory theory.
2. Neoplasms.
3. Degeneration theories.

The Inflammatory Theory.

The possibility of prostatic enlargement being due to an inflammatory process was suggested by De Sault as long ago as 1813. Since then the theory has been upheld by a great number of authorities, and especially by Rotschild and Ciechanowsky.

This latter observer maintained that no true increase of gland tissue occurred with enlargement of the prostate. The increase he regarded as only apparent, and due to dilatation of the glands. According to Ciechanowsky, the dilatation was the result of blockage of the prostatic ducts following inflammation in the surrounding stroma. The obstruction of the ducts resulted in the accumulation of secretion in the acini and their gradual dilatation. The chief cause of enlargement of the prostate would (according to this theory) be previous attacks of inflammation, and particularly of inflammation in the stroma surrounding the prostatic ducts.

This inflammatory theory has received so much support that no apologies need be offered for dealing with it at some length. Infection is one of the commonest causes of cell proliferation that we know, and the urethra and the prostate are particularly exposed to infective processes. Yet in spite of the seductive nature of the theory, offering, as it does, a simple and easily acceptable explanation of enlargement, I am convinced that it is insufficient to explain the type of prostate under present consideration. My reasons for refusing to accept the inflammatory theory, as put forward by Ciechanowsky, are as follows:

1. That as a rule signs of inflammatory reaction are absent in sections of enlarged prostate. It is true that occasionally a round cell infiltration is to be found, but I believe this to be a secondary

* Delivered before the Royal College of Surgeons of England on February 3rd, 1922.

condition and one that is dependent on a superimposed sepsis of the urinary tract. When the frequency with which sepsis follows prostatic enlargement is remembered the occasional appearance of a round-cell infiltration in such sections is not surprising.

2. That I have never succeeded in demonstrating organisms in microscopic sections of enlarged prostate. These negative results are in conformity with those obtained by Dudgeon and Cuthbert Wallace. It is true that these observers by means of cultural methods succeeded in obtaining evidence of organisms in enlarged prostates, but the low grade pathogenicity of the organisms obtained was strongly against their being responsible for the condition of enlargement.

3. If enlargement is due to dilatation of existing glands rather than to proliferation, a direct relationship should exist between the size of the prostate and the degree of glandular dilatation that has taken place. "Ex pede Herculem." No such relation exists. In other words, it is impossible for a person who examines a microscopic section to state whether it comes from a very large or only a moderate-sized prostate. Dilatation, moreover, of glands is not infrequently found in old prostates showing no enlargement whatever.

4. No clinical relationship can be established between enlargement of the prostate and previous urinary infections, whether gonococcal or otherwise. As will be subsequently shown, enlargement is particularly rare in the very races that suffer most from venereal disease.

The Adenoma Theory.

The adenoma theory has been supported by Socin, Cohnheim, Rindfleisch, Cuthbert Wallace, Velpeau and the French school of Pathology. It is probably the view that is most commonly held at the present time, but the arguments against it are very strong. While I agree that the type of enlargement we are considering may supply conditions favourable to the formation of definite neoplasms, I am convinced that the enlargement itself is not neoplastic in origin. The arguments against the neoplastic theory are as follows:

1. In order to explain the condition found in enlargement of the prostate we should have to postulate the appearance of multiple adenomata not only in the prostate itself but in the peri-urethral, subcervical, and in certain cases the subtrigonal glands, for, as we shall subsequently see, enlargement of the prostate is not an isolated phenomenon, but is associated with widespread changes in the genital tract.

2. Adenomata are not common at the age at which prostatic enlargement occurs.

3. If we examine a microscopic section we find that the newly formed glandular tissue reproduces the original prostatic tubules with extreme fidelity. They are often indistinguishable from normal prostatic glands, and, as has been shown by Herring, they are provided with well formed ducts. They also secrete a fluid similar to prostatic fluid, but containing more fat. The tissue of a tumour, on the other hand, is almost invariably atypical, and with rare exceptions it does not develop the physiological properties of the organ in which it develops.

Theories of Degeneration.

On *a priori* grounds there is much to be said in favour of a theory that regards enlargement of the prostate as a degenerative process overtaking an organ that has passed its period of full functional activity. Although a man of 55 may be regarded as comparatively young, yet from the point of view of his reproductive system he is old. It is true that active spermatogenesis may be seen in the seminiferous tubules of a nonagenarian and that the sexual life of the male has no abrupt termination. The menopause in his case is so gradual in its onset as to be almost imperceptible. Nevertheless a decline in sexual activity occurs and the genital tract of a man of 55 bears unmistakable signs of involution. Launois was one of the first to suggest that enlargement of the prostate is but a part of a degenerative fibrosis taking place throughout the whole urinary apparatus, kidney, bladder, etc. The cause underlying this degeneration he considered to be arterio-sclerosis. This view was supported by Guyon and many others. However, although Launois was undoubtedly right in drawing attention to the fact that prostatic enlargement is a part of a general change, it cannot be said that subsequent observations, including my own, have shown that this change is necessarily associated with arterio-sclerosis. Ciechanowsky, Casper, and Motz have all failed to find evidence that arterio-sclerosis is the cause underlying prostatic enlargement, and in my own series of cases not more than 10 per cent. showed arterial thickening. When the age of these cases is taken into consideration the occasional existence of arterio-sclerosis is not surprising.

Other observers have suggested that the prostatic condition is secondary to changes in the testes rather than to the presence of an arterial lesion. The relation between the testis and the prostate is a very close one, especially during the first half of life, and the theory is a plausible one. In order to test it I have made a careful examination of the testes associated with enlargement of the prostate, both as regards their relative weights and their histological appearance. I have entirely failed to establish any relation between the weight and naked-eye appearance of the testes and the size of the prostate. Microscopic examination of testes shows, however, the existence of changes that are undoubtedly degenerative in nature. The basement membrane of the tubules is thickened and the interstitial cells of Leydig are scanty, and in some cases obviously degenerating. In sections stained with Scharlach R. the cells of the tubules show the presence of numerous coarse granules. That these granules are due to the formation of fat in cells undergoing degeneration can be shown by suitable methods of staining and by the use of crossed prisms. However, although signs of degeneration of the tubules are undoubtedly present, spermatogenesis is by no means arrested.

In eight out of eleven prostatic cases I found active spermatogenesis to be present. Of the three cases in which it was absent two had suffered from malignant prostates, and, as Mott has shown, spermatogenesis is in any case absent in cases of malignant disease. A point of especial interest in connexion with these sections was the fact that the degenerative processes were distinctly patchy in distribution—that is to say, one tubule would show obvious changes and cessation of spermatogenesis, whilst another would appear to be fairly normal.

As a control the testes of men of equal age, but without enlargement of the prostate, were examined. Similar changes to the above were found in these controls.

It must therefore be concluded that the alteration in the testes that are associated with enlargement of the prostate do not differ in kind (although they may be slightly greater in degree) from the changes that normally take place in the testis at the end of active sexual life.

Having reviewed the theories that have been advanced to explain the condition, it will next be advisable to make a brief survey of some of the distinguishing features of prostatic enlargement, including its macroscopic and microscopic appearance. We shall then be in a position to see whether there is any other theory which offers a more satisfactory explanation of the condition.

The Site of the Enlargement.

The first point to be considered is the precise situation in which the increase in size occurs. What part of the prostate is most commonly affected? The fact that so many of our statistics on the subject have been drawn from surgical sources has led to an exaggerated idea of the rôle played by the middle lobe in this matter. Increase in the size of this lobe is, of course, almost invariably productive of symptoms, and it is on this account rather than because the middle lobe has any monopoly in enlargement that such emphasis has been laid on it. By far the commonest form of enlargement (over 70 per cent. of my cases) is one which involves lateral and middle lobes alike. Indeed, there is only one portion of the prostate which does not take part in enlargement, and that is the posterior lobe. So few are the exceptions to this rule that I have been tempted to believe that the prostate (concerning whose functions we know so little) is in reality a composite gland, the posterior lobe of which differs, not only in histological structure but also in its function, from the rest of the gland. At any rate, there is sufficient ground for the belief that the posterior lobe has an individuality of its own, and one of the points of difference between it and its fellows is the fact that although it is not infrequently the starting point of a carcinoma it scarcely ever takes part in a non-malignant enlargement.

Motz and Perearnau have advanced the view that what has been termed enlargement of the prostate is in reality not an enlargement of the prostate proper but rather of the submucous glands. The situation of the glands to which these authors have accorded so important a rôle is best seen in a section through the posterior urethra and bladder neck somewhere about the fifth foetal month. Fig. 2 is from a diagram of Lowsley's, and shows that the glands are arranged in three groups: (1) The urethral (Albarran's glands); (2) the subcervical; and (3) subtrigonal. The names given to the different groups sufficiently describe their situation. There is one point, however, that is worthy of emphasis, and that is

the fact that the subcervical group of glands is separated from the prostate proper by the interposition of the bladder sphincter. The fact that the subcervical glands lie internal to the sphincter gives support to the view that they rather than the prostate play the chief part in obstructions in the neighbourhood of the vesical neck, and in intra-vesical projections (specimen). However, whilst readily admitting that these glands, rather than the prostate itself, are in many cases the cause of an obstruction, Motz and Perearnau have, in my opinion, gone too far in denying all responsibility to the prostate. The truth, as is so often the case in arguments, scientific or otherwise, would appear to be that both statements are correct. Some cases of enlargement are mainly prostatic, whilst others are mainly submucous. It is difficult, if not impossible, to estimate the percentage of cases in which the obstruction is mainly submucous and that in which it is chiefly prostatic. However, as a rough indication of the frequency with which alterations in the submucous glands are encountered we have Lowsley's statement that in men over 30 Albarran's group of glands are enlarged in 25 per cent. of cases and the subcervical group in 22.8 per cent. Similarly, J. R. Caulk, as the result of the examination of 485 cases of clinical obstruction, found enlargement of Albarran's glands in 97 (20 per cent).

Prostatic Enlargement a Part of a Condition Affecting the Whole Genital Tract.

Already we have accumulated sufficient evidence to justify the statement that enlargement of the prostate is not an isolated phenomenon, but is associated with changes in other portions of the genital tract. These changes (which, at any rate in the case of testis, are definitely degenerative in nature) are found in the testis, the prostate proper, the peri-urethral, subcervical, and subtrigonal glands. There is also evidence that the vesiculae seminales may be implicated. In a great many cases they are found to be enlarged and thickened. According to Lowsley, this occurs in 32 per cent. of men over the age of 30. In certain instances the dilatation and thickening of the vesicles may be indirectly due to pressure on the ejaculatory ducts, but in others the change is a part of the degenerative process affecting the whole genital tract.

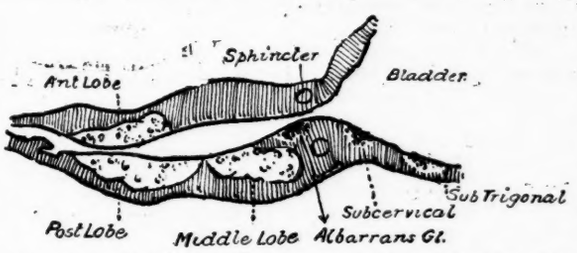

FIG. 2.—Sagittal section through post-urethra and bladder neck; fifth month (after Lowsley), showing developing prostate and submucous glands.

Section of Enlarged Prostate.

The following are the naked eye and microscopical appearances:

Naked Eye Appearance.—A section through an enlarged prostate reveals the presence of a number of small round opaque areas of a colour that varies from white to a pale yellow. These areas are scattered throughout the substance of the gland. By the advocates of the neoplasm theory they have been regarded as adenomata. They are surrounded by a capsule of translucent normal prostatic tissue, from which they can be enucleated with comparative ease. In certain cases these primary areas are subdivided into secondary smaller ones. Similar areas are to be seen in the enlarged prostate of a dog.

Microscopic Appearance.—A microscopic examination shows that the opaque masses or nodules described above are formed of glandular tissue. In a single section may often be seen different phases in their development. This is especially the case if the dog be selected for the purpose of their study.

At an early stage in the formation of one of these masses there is an active proliferation of the endothelial lining of a group of glands. The proliferation is mainly directed to the formation of a large number of intra-acinous growths, which become more and more luxuriant as time goes on. As a result of the enlargement occurring in these central glands the surrounding tissues with their glands become disposed concentrically around the area of proliferation so as to form a capsule. The formation of intra-acinous growths in time becomes so luxuriant that a section through one of these areas of proliferation resembles nothing so much as a section through a papilliferous ovarian cyst. In frozen sections stained with some such dye as Scharlach R. it will be seen that in certain areas these proliferated glands are undergoing marked fatty degeneration. The microscopic appearances in the human prostate are similar to the above, although less striking. There exists the same tendency to the formation of intra-acinous growths, and there are the same patches of fatty degeneration.

Although there might seem to be little in common between the above and the changes that have previously been described as occurring in the testes associated with the enlargement, the similarity is greater than would at first sight appear. In both testis and prostate we have a degenerative process that picks out certain tubules whilst it leaves others more or less intact. In the gland cells of either organ we note the same structural alterations—namely, an enormous increase in the size and number of granules that take on a red stain with Scharlach R. In both instances this fatty degeneration is patchy in its distribution throughout the organ and is associated with an increase in the interstitial fibrous tissue. The chief difference lies in the fact that whereas the tubules of the prostate have undergone a previous proliferation, those of the testis have not.

The Cause of Enlargement.

An enlarged prostate is, therefore, according to this view, to be regarded as a prostate that has undergone a form of degeneration which, for the sake of convenience, we may term fibro-epithelial. The condition may be considered in the light of an accident that has occurred during the period of involution of the genital tract. If we look for an analogy to this in the case of the female we may find one in the somewhat obscure condition known as a sero-cystic disease of the breast. The breast, like the prostate, is one of the secondary sexual glands. It is in intimate association with the ovary, just as the prostate is with the testis. Finally, the breast shares with the prostate the same tendency to develop lesions during the period of sexual decline. When we examine a microscopic section of a breast that has become enlarged as the result of sero-cystic disease, we find that it presents a very close similarity to that of an enlarged prostate. We find the same formation of intra-acinous growths as the result of epithelial proliferation. There is the same tendency to dilatation of the acini, and an equal absence of round-celled infiltration, or of other signs of inflammation. Moreover, the changes in the breast show the same patchy distribution that we have seen to be characteristic of the prostatic condition, one group of glands being markedly affected whilst another remains free. The most obvious difference between the prostatic and the breast lesions is the presence of fatty degeneration in the former case and its absence in the latter.

The difficult question now arises as to what are the causes that determine the onset of fibro-epithelial degeneration. Why should one prostate undergo an enormous enlargement whilst another to all intents and purposes escapes? We have seen that infection alone fails to account for the condition, although it may possibly act as a contributory cause. Is there any reason to suppose that any of the other causes that have been put forward at various times exert any real influence? It has been suggested that congestion may determine the onset of enlargement. We know that chronic engorgement may cause hyperplasia, and there are reasons for believing that the prostate is particularly prone to congestion. The frequency with which a thrombosis of the plexus of Santorini is found in the prostate at necropsy is sufficient evidence of the liability of this organ to venous stasis. But although there exists an antecedent probability that venous congestion may be a contributory cause, it is unlikely that it is of more than secondary importance. Other possible explanations must therefore be examined.

The Relation of the Prostate to the Endocrine System.

The intimate relationship of the prostate to the interstitial cells of Leydig in the testis is well known. Through Leydig cells the prostate becomes linked with the other endocrine glands, and notably with the suprarenals and the pituitary. The relationship between the prostate and the pituitary has indeed been directly demonstrated by Coetsch, who found that, in feeding experiments upon young hypophysectomized rats, anterior lobe stimulated the growth of the prostate whilst posterior did not. But in addition to this well-established connexion between the prostate and the endocrine system, a claim has been advanced by certain observers that the prostate itself is responsible for the elaboration of an internal secretion. The evidence in favour of this, although suggestive, is very far from being conclusive, and is chiefly based on the work of Macht.

Macht fed tadpoles on prostatic fluid and demonstrated that it hastened differentiation and metamorphosis, but to a less extent than did thyroid extract. He also found that injections of the extract provoked contraction of the genito-urinary organs both in the male and female (that is, uterus, bladder, ureters, etc.). Attention has, moreover, frequently been called to the fact that mental symptoms are particularly prone to develop after prostatectomy. Macht, however, as the result of a series of ingenious experiments on prostatectomized rats, showed that in the case of these animals cerebration was unimpaired by prostatectomy. The mental symptoms following prostatectomy should, therefore, in the light of what we have found, be correlated with the degenerative processes that have taken place in the testes, rather than with any removal of prostatic secretion.

My own observations, as far as they go, indicate that injections of extract of prostate in the human being do not produce any response in the way of alteration of blood pressure, pulse, respiration, etc. I have used both an autolysit and a commercial preparation of prostatic extract for this purpose and have never obtained a reaction that could be appreciated clinically. Incidentally I may mention that I have found that prostatic extract, when employed as a therapeutic measure, is occasionally of use during the early phases of enlargement, but of little benefit in the later.

As a final piece of evidence in favour of the prostate furnishing an internal secretion is the case reported by Doré, in which prostatectomy was followed by a marked hypertrophy of the breasts.

Apart from the above considerations the close dependence of the prostate on the ductless glands during its period of development affords sufficient ground for considering carefully the possibility that enlargement may be associated with some change in the endocrine system. The menopause in the female is generally accompanied by a temporary loss of endocrine balance, and it is not improbable that a similar state of affairs may arise during the period of sexual decline in the male. For this reason I have considered it advisable to examine the interstitial cells of the testis, the suprarenal capsules, and the pituitary in cases of prostatic enlargement. The necessity for examining the interstitial cells of Leydig had, indeed, long been apparent, and remembering the tendency of "prostatics" to exhibit exaggerated sexual desire, the possibility had occurred to me that enlargement and sex hyperaesthesia might both depend on an increase in Leydig cells. That this is not the case has already been shown in the section dealing with changes in the testis. I found that Leydig cells were diminished rather than increased in cases of prostatic enlargement. So far I have not been able to demonstrate any alteration in structure in either the suprarenal or the pituitary, but as the histology of the endocrine glands is notoriously difficult on account of early *post-mortem* changes I would prefer at the present to make no further statement on the subject. The condition of the endocrine glands in cases of prostatic enlargement offers a fruitful field for research, not only by means of histological methods, but still more by an investigation of basal metabolism and a determination of the respiratory quotient.

Racial Distribution of Enlargement.

In the hope that thereby some light might be thrown on its etiology, I have obtained what information I could on the incidence of prostatic enlargement amongst the various races of the world. In trying to arrive at an estimate of its frequency it must always be borne in mind that enlargement is a disease of old age, and that where old men are rare enlargement will be rare also. This undoubtedly explains to some extent the rarity with which prostatic obstruction is encountered amongst certain African races. It also makes the interpretation of hospital statistics difficult, and prevents the giving of anything more than a general impression of the frequency of the condition.

The following summary has been prepared from the answers' received to my questionnaire inquiring into the incidence of the condition in the various countries of the world.

India.—Prostatic enlargement is fairly common, but less so than in England. In an out-patients' department dealing with approximately 1,000 new male cases per annum, some 30 cases of prostatic enlargement were seen. The condition is definitely commoner amongst Mohammedans than Hindus. It is found more frequently amongst the well-to-do than the hospital class. As in other countries where the individual reaches sexual maturity at an early age the onset of symptoms from enlargement is earlier than in England.

Japan.—Prostatic enlargement is very rare. Dr. Matsumoto reports that in the records of the out-patients' department of the special Hospital for Urinary Diseases at the University of Kyoto there is an average of four cases of enlarged prostate per annum, although the total attendances run into several thousands. Professor Hayami, of the same university, has never encountered the condition on the dissecting table. Japanese literature on the subject is very scanty.

China.—Very rare. Dr. Koch, of the Government Hospital at Hong Kong, states that during the last fourteen years no case of enlargement has been seen, although the yearly average of in-patients is 4,000 and of out-patients 25,000. Similarly, in the Canton Hospital records for the years 1915, 1916, and 1919 there are three entries of prostatic enlargement, although during the same period as many as 156 cases of vesical calculi are recorded. During the ten years 1910–1919, 13,761 operations were performed in this hospital, of which 6 were prostatectomies.

Egypt.—Fairly common, but less common than in England. At the Kasr-el-Ainy Hospital, Cairo, there were 17 cases of prostatic enlargement in 1921 out of a total of 8,472 male in-patients. This appears to constitute an average for the last ten years. All except one of these cases were amongst Egyptians. The actual incidence of the trouble is higher than the above figures indicate, as patients do not usually report until urgent symptoms supervene. It appears to be common amongst the well-to-do classes. In Upper Egypt and the Sudan enlargement is much rarer. It is interesting to note that in the same region hypertrophy of the breast in the male is comparatively common.

South Africa.—An inquiry amongst medical men practising amongst natives has elicited the unanimous opinion that enlargement is extremely rare amongst the natives of South Africa. It must, however, be remembered that few natives live beyond the age of 50.

South America.—Common to those of European stock living in large cities. Incidence amongst aborigines unascertained.

North America.—Incidence in white population apparently as great as in England. The majority of American writers agree that the condition is rare amongst the negroes of the States, the only statement to the contrary being made by Matas. C. H. Day estimates the ratio of incidence amongst whites to that amongst negroes to be as 7 to 3. If this is only approximately correct the incidence amongst the negroes of North America would appear to be greater than that for the original African stock from which they came.

Incomplete as this attempt to discover the incidence of prostatic enlargement may be, it is at any rate sufficient to justify the following deductions:

1. That enlargement of the prostate is a condition having a definite distribution that is anthropological rather than geographical in character. Whereas the condition is common in the Circassian race generally, both in Europe and in the New World, it is somewhat less frequently found amongst those of Semitic and Arab stock, and amongst the inhabitants of India. Amongst Mongols and Negroes it is extremely rare.

2. That enlargement can have nothing to do with the causes that have at various times been suggested as determining its incidence—that is, previous attacks of gonorrhoea, sexual excesses, masturbation, etc.—for the races that are more or less immune from enlargement are the very races in which these supposed causes are most in evidence. Generally speaking, enlargement is commoner amongst meat eaters and those leading the sedentary lives of cities than amongst the vegetarians and frugal livers.

Conclusions.

1. It is impossible to explain enlargement of the prostate by any theory of chronic inflammation alone.

2. Although enlargement may reproduce conditions favourable to the development of a neoplasm, the enlargement itself does not come into the category of true tumours.

3. The condition is in the nature of a fibro-epithelial degeneration which finds its analogy in the female in sero-cystic disease of the breast.

4. This degeneration may be regarded as an accident occurring during the progress of involution of the genital tract.

5. The cause that determines the onset of the condition is unknown, although it is not improbably connected with a loss of endocrine balance occurring during this period.

6. Prostatic enlargement shows a definite distribution that is anthropological rather than geographical in character. It very rarely occurs amongst Mongolians and Negroes.

My thanks are due to so many for their assistance in providing me with material and facilities for the above research that it is impossible to mention them all specifically by name. I wish, however, to express my special obligation to Professor Reynolds,

F.R.C.V.S., and above all to Sir Frederick Mott, F.R.S., and the authorities of the Maudsley Hospital for allowing me to work in their well-equipped laboratories.

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METABOLISM OF CHILDREN UNDERGOING OPEN-AIR TREATMENT, HELIOTHERAPY AND BALNEOTHERAPY.

BY

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IN consideration of the beneficial effect of heliotherapy in the treatment of tuberculosis attention has been turned almost entirely to the influence of the ultra-violet rays, which do not penetrate more than 0.1 mm. (F. E. Barnard), being absorbed by the surface film of the skin; and (perhaps) more justly to the luminous rays, which, in part, penetrate and are absorbed by the blood and deeper tissues. Other factors of great importance must also be taken into account—namely, the effect of the cooling power of the open air on the exposed body in stimulating muscle tone and body metabolism; the effect of breathing cool air with low vapour tension on promoting evaporation from the respiratory membrane,[1] and so enhancing the outflow of secretion from it and the flow of lymph and arterial blood through it; the effect of cool air in promoting evaporation from and flow of lymph through sores and discharging sinuses; the effect of sunshine in promoting such evaporation and flow, and in warming diseased parts exposed to it. In this paper we propose to consider the effect on body metabolism.

In published results[2] it was shown that body metabolism or heat production of healthy adults was raised by sitting quietly out of doors in the shade for half an hour on an ordinary winter's day, and that shivering was not necessary to raise metabolism. We found that a cooling power between 15 and 20, as measured by Hill's dry kata-thermometer, gave the proper conditions for avoiding shivering for our subjects, who wore the same clothes as indoors.

To continue our observations on the effect of open air, and at the same time to investigate that of heliotherapy on body metabolism, we carried out a number of experiments at Lord Mayor Treloar's Hospital at Alton, and Hayling Island, Hampshire, during the past summer. In the present paper we record these results.

The conditions at this hospital were particularly suitable, our subjects being children with surgical tuberculosis, treated, among other methods, by open air and heliotherapy. After a course of skilful training the children are able to lie naked in the open air for many hours under atmospheric conditions which would soon make an ordinary healthy individual shiver and uncomfortable unless wearing his ordinary clothes. The process by which the children are inured to exposure is a gradual one and takes a longer time in some cases than in others. Sir Henry Gauvain,[3] the medical superintendent, has described the method as employed at Alton.

Methods.

We used the Douglas-Haldane method of indirect calorimetry, following the directions given by Cathcart;[4] in this method, which is recognized to be an accurate one, both O_2 and CO_2 are estimated in the expired air.

The children under observation were of an age—8 to 16 years—of understanding, and met the conditions of experiment willingly. After a few preliminary trials with the mouthpiece, the process of taking a sample of expired air concerned them little. One factor which helped us considerably was that our subjects, being hip or spine cases, were fixed in splints in bed. Movement, except of the head and arms, was practically impossible. We took care to exclude movement of the head and arms for the usual period before taking the sample.

Breakfast was taken at 6 a.m., a glass of milk at 8.30 a.m., dinner at 12 noon, tea at 4 p.m., and supper at 7 p.m. (summer time). In the case of observations made before breakfast, breakfast was taken at 8.30 a.m. Observations after breakfast were made between 10 a.m. and 12 noon; those after dinner between 2 p.m. and 4 p.m.

Records of dry and wet bulb air temperatures, of dry and wet kata-thermometer cooling powers, and of black fur surface temperatures were taken to give indications of the atmospheric conditions under which the observations were made. The last give a measure of the radiant energy of the sun. Records of cheek surface and axillary body temperatures and of pulse rates were also taken. We did not employ subjects who showed an abnormal body temperature. Only one or two of our cases showed a broken skin, and these lesions were sinuses or ulcers of a minor degree.

For comparison, we have used the figures for calories per diem given in Benedict and Talbot's[5] standards for children of the same weight as ours; these are well known basal standards. Strictly speaking, the only figures of our results that may be compared with these basal standards are those we obtained from our subjects in the post-absorptive state—that is, before breakfast. Nevertheless for comparing one set of our figures with another set of our figures obtained under similar conditions in regard to the taking of food, we have taken the liberty of using these standards, and noted what difference each set of our results showed from the standard for children of the same weight as ours. This seemed to be the best method for comparing our results. We have also calculated the heat production per unit of body surface, using both Du Bois's and Benedict and Talbot's formulae for calculating the surface and reaching the same conclusions from the use of each.

Results obtained from Children who had been Treated for many Months with Open Air and Heliotherapy.

Our first experiments were done on children who had been under treatment for many months. Some of them had pigmented very well under the influence of the sun—that is to say, they had not blistered, but bronzed. Others, who did not pigment well, easily blistered, and, not tolerating much exposure to sun, were kept more in the shade. All the children on an ordinary summer's day wore only loin-slips, and paid no attention to the fact that they were so much exposed to the open air; there was no evidence of shivering.

Sir Henry Gauvain states that the children who do not pigment well are slower in progress. We noted that the children who pigmented well were usually of better weight than those who did not pigment well, but the average difference in metabolism at Alton was negligible after due allowance was made for difference in weight. From this we conclude that heliotherapy was not so much responsible for the rise in metabolism observed as was the open air, since those who pigmented well received much more heliotherapy than those who did not pigment well.

We should like to emphasize here that we were not dealing with the cure of the disease but with the metabolism alone. While many clinicians hold the view that heliotherapy is greatly concerned with the arrest of the disease, the different factors at work have not so far been analysed.

To return to our results: Table I shows the figures obtained from those who pigmented well, and Table II shows the figures from those who did not pigment well. The Alton figures may be compared. Taking both Table I and Table II together the average increase of our figures before breakfast above the standard figures for the same weight was about 40 per cent., whereas after breakfast and after dinner the average increase over the standard was about 50 per cent. The out-of-door cooling power and its effect on metabolism vary, but we may conclude that the average effect of the hospital food in our observations was not more than 10 per cent. Du Bois found the basal metabolism increased only

TABLE I.—*Average Figures for Children who Pigmented Well.*

Time and Place.	Age (Years).	Weight in Kilos.		No. of Observations.	Calories per diem†		Percentage Increase of Calories over Standard.
		Found.	Standard*		Found.	Standard‡	
Before breakfast.							
At Alton ...	11.5	32.0	32.0	7	1598	1172	36.3
At Hayling ...	12.0	29.9	35.0	12	1555	1067	45.7
After breakfast.							
At Alton ...	12.0	27.6	35.0	9	1579	1046	50.9
At Hayling ...	11.0	25.4	30.0	19	1464	974	50.3
After dinner.							
At Alton ...	11.3	37.2	31.0	9	1852	1302	42.2
At Hayling ...	11.7	30.9	34.0	21	1670	1108	50.7

* For same age.
† The resting metabolism found during exposure out of doors is calculated per diem. The metabolism is at a lower figure when the child is clothed and in the ward during the night.
‡ For same weight without food.

2 per cent. by a light breakfast (two to three hours after it). We consider that the 40 per cent. increase of our figures above the standard was due to increase of bodily tone by exposure to open air. We have already proved that metabolism of healthy adults wearing ordinary clothes is raised sometimes nearly 40 per cent. by open air apart from heliotherapy.[1]

TABLE II.—*Average Figures for Children who did not Pigment Well.*

Place and Time.	Age (Years).	Weight in Kilos.		No. of Observations.	Calories per diem.		Percentage Increase of Calories over Standard.
		Found.	Standard.		Found.	Standard.	
At Alton.							
Before breakfast	10.3	23.4	27.0	9	1345	948	41.8
After breakfast...	11.7	26.3	33.0	10	1431	1017	40.7
After dinner ...	13.0	29.4	40.0	10	1636	1094	49.5

Some may think that the better conditions of diet, etc., provided in hospital were partly responsible for the increase in the case of these children, but we take it that they were not much better than the conditions for the healthy children from whom Benedict and Talbot obtained their standards. It is not merely a question of provision of food, but of stimulus, by open air exposure, to eat and absorb the food. Other points of argument will be considered in our next experiment.

Results obtained from Children "On Admission" and After the First Three Months of Open Air and Heliotherapy.

Sixteen children, eight boys and eight girls, were employed for observations a few days after admission and again after the first three months of open air and heliotherapy. The girls were above, but the boys were under, normal weight for the same age.

These children were placed in isolation cubicles, which were very well ventilated, the cooling power in these cubicles being much the same as in the shade outside. The children were in bed covered with light bedclothes. As a rule the upper part of the body was covered only by a thin shirt. There seems little doubt that most of them had been much more shut up in their own homes.

As a rule we took four observations on consecutive days from each child whilst in the cubicle a few days after admission, so that they would be accustomed to their new surroundings. After two weeks in the cubicles the children were taken outside in bed and gradually exposed to the open air and sun. Some of them were more able to stand exposure than others at the end of three months' treatment, so that the former were more pigmented than the latter. In any case none of these children were so well adapted to exposure as the children who had been in hospital for some months longer.

Table III shows the average results we obtained "on admission" and "after the first three months of treatment." It will be noted that "on admission" our figures were about 30 per cent. above the standard, and "after three months of treatment" they were about 50 per cent. above the standard, so that there was a 20 per cent. increase in metabolism. These observations were taken after breakfast and after dinner, but we were careful in each case to take the observations "after three months' treatment" at the same time, with regard to meals, as our observations "on admission."

We have already shown that on an average the hospital diet is responsible for an increase in metabolism of 10 per cent., so that our figures become for "on admission" 20 per cent. above the standard, and for "after three months' treatment" 40 per cent. above the standard. We have made full allowance for the children's increase in weight owing to their condition improving, in the hospital, by taking, for comparison, the standards for the different weights of each child observed "on admission" and "after three months' treatment."

TABLE III.—*Average Figures showing Effect on Metabolism of Three Months' Treatment.*

	Eight Boys, aged 10.4 Years.	Eight Girls, aged 9.5 Years.
Weight in kilos:		
On admission	22.3	25.8
After three months' treatment ...	24.3	27.0
Standard for same age	27.0	24.0
Number of observations:		
On admission	29	37
After three months' treatment ...	30	28
Calories per diem:		
On admission, with food	1183	1270
After three months' treatment, with food	1460	1514
Standard, for same weight on admission, without food	916	946
Standard, for same weight after three months' treatment, without food.	973	975
Percentage increase of calories found over standard:		
On admission	29.1	34.2
After three months' treatment ...	50.2	55 3
Percentage increase in metabolism after three months' treatment	21.1	21.1

It seems at first sight a remarkable result that the children examined in the cubicles "on admission" had a metabolism on an average 20 per cent. above the basal standard. The observations numbered 96 for 22 children. Recently Blunt and others,[8] using an indirect method of calorimetry, and therefore not a closed chamber, found that the basal metabolism of under-weight children tends to be higher than that of the normal child. In some of our cases this may be the explanation, but many of our children were not under-weight, and those who were under-weight did not by any means give the highest percentage increments. Wright,[6] using the same method as we did, has published some figures which indicate that the metabolism of healthy British naval youths in bed and in hammocks is much higher than the basal standards for children in closed chambers. The increase is probably due to the different conditions of atmosphere and clothing under which our observations and the basal standards were obtained.

As already stated, our observations "on admission" were taken in especially well ventilated cubicles, whereas Benedict and Talbot's standards were obtained whilst the child was in a closed chamber. Undoubtedly under our conditions more "tone" would be retained than under Benedict and Talbot's conditions. The temperature inside their chamber was not far from 22° C. to 23° C. The authors[7] advise that the subject in this chamber should be dressed, including stockings and shoes; in addition a pair of woollen socks should be drawn over the shoes to prevent cold feet. In the cubicles at Alton we observed an average dry bulb temperature of 19.9° C., the figures ranging from 17.4° C. to 22.6° C. We

have shown[1 2] that body metabolism is not regulated by temperature of the air, but by cooling power—that is, the wind and other factors are concerned as well as the dry bulb temperature.

We must take into account the presence of muscular spasm in some of our cases owing to the disease, but these worst cases did not give the highest figures; and Wright's naval cadets were obviously not ill. We see no reason to assign any great part to psychical influence, since our subjects were isolated and were accustomed to their new surroundings before we made our observations.

It is possible that English children have a somewhat higher basal metabolism. We do not know of any observations that have been done on children of this age in this country in chambers similar to those used by Benedict and Talbot.

Note on Balneotherapy.

In Table I it will be observed that we have given separate figures for Alton and Hayling Island. The Hayling Island percentages are, on the whole, higher than those for Alton. At Hayling Island the children lived in a more exposed position, and had balneotherapy in the sea in addition to open-air treatment and heliotherapy. The period of immersion in the sea varied between half a minute and seven minutes per day during the summer, with a sea temperature of about 60° F.* We took samples of expired air for analysis during the immersion, and found that metabolism was between two and three times that of resting metabolism, and, of course, higher if movement—swimming, etc.—were allowed. Sir Henry Gauvain states that some children do better under the seaside conditions at Hayling Island than inland at Alton; others do better at Alton than at Hayling Island; others, again, do better if given an occasional change from one place to the other.

In conclusion, we wish to state that the excellent muscular tone and condition of the children who had been treated is sufficient evidence of the high value of the methods employed, and is remarkable when one considers that the children had been fixed in splints in bed for so long a time. It seems likely that this carefully graduated treatment could be applied with success in other conditions involving a long period in bed.

We are indebted to the members of the hospital staffs for much help during this work.

Summary.

1. Observations during the past summer on metabolism of children crippled with surgical tuberculosis and lying fixed in splints in bed and more or less nude, at Lord Mayor Treloar's Hospital, Hampshire, are described. Their metabolism on the average was increased 40 per cent. above the standard, for the same weight, of children confined in a closed calorimeter.

2. After three months' treatment, including graduated exposure to open air and heliotherapy, their metabolism out of doors was 20 per cent. above that in well-ventilated cubicles soon after admission.

3. Children who had been treated for many months showed high metabolism in the out-of-door conditions, those who pigmented well in the sun giving about the same figures as those who did not pigment well, after making allowance for weight. The former gave the better figures for weight.

4. It is considered that the rise in metabolism caused by heliotherapy *per se* is insignificant compared with that caused by exposure to open air. At the same time the value of heliotherapy as a factor towards arrest of the disease is not disputed.

5. Children on admission in well-ventilated cubicles gave results about 20 per cent. higher than basal standards for closed calorimeters. It is considered that the open-air conditions in the former were mainly responsible.

6. Balneotherapy increases metabolism much above the resting level.

7. The bodily tone and general condition of the children under the specially graduated treatment is remarkable when the long period of immobilization in splints in bed is considered. The treatment might be applied with advantage in other cases involving long confinement in bed.

* Varying periods of immersion result in corresponding variations in metabolic activity. Balneotherapy thus affords a ready and controllable means of stimulating metabolism to a desired degree. We are not concerned in this paper to discuss the optimum metabolism desirable, though we cannot fail to appreciate the clinical importance of this factor in treatment.

Appendix.

A number of experiments were completed during the past few winter months. On suitable days the children were placed out of doors in the sun, even though the temperature of the air was very low. They were covered up with bedclothes, only the face and hands being exposed. The days were few on which the children had to be kept indoors during our observations. The table shows the results obtained, the figures being given as percentage increments over the standard basal figures for the same weight. The observations were made about five hours after breakfast and three hours after a glass of milk, so that no more than 10 per cent. should be deducted throughout for the influence of food.

Table showing Percentages above Basal Figures.

	Subject.					
	H.Z.	J.L.	A.H.	H.N.	E.G.*	J.C.*
In Summer, under ordinary conditions of open-air treatment	37	52	46	60	69	32
In Winter:						
Under ordinary conditions of open-air treatment	58	59	73	96	99	79
In warm room at 70° F.	—	50	51	78	62	27

* E. G. and J. C. were kept in the warm room at 70° F. for four days and four nights, and for some observations were in the post-absorptive state.

It will be observed that the winter results are, on the whole, a good deal higher than those obtained for last summer. Apart from this general statement, the winter results are not comparable with one another, since some were taken on much colder days than others, as indicated by the cooling power of the atmosphere.

We also imitated Benedict and Talbot's conditions by placing the subjects in a warm room at about 70° F. The results in the warm room should be compared with the winter results under ordinary conditions of treatment, as the former were, as a rule, obtained a couple of hours after the latter. The metabolism was decreased—in some cases markedly—by this process, but on the whole it was still much above the basal standard. We do not think that the disease in itself can explain much, if any, of the difference, but think it probable that the children, owing to open-air treatment, had a higher basal metabolism than those from whom the basal standards were obtained in America, and that only prolonged warm room treatment will bring it down. The Britisher going to the tropics has, at any rate for some time, a higher basal metabolism than the native during waking hours.

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THE members of the City Medical Society of Kankakee, Illinois, U.S.A., have been discharging since March, 1921, the duties usually performed by the county and township medical officer with regard to necessitous persons, and recently also those of the medical officer of health for the city. The members of the society are divided into four groups, each of which serves for three months. In each group are practitioners who are competent to do major surgery, as well as specialists in eye, ear, nose, and throat work. The scheme provides that the indigent shall have a choice of medical practitioner, and, according to the *Journal of the American Medical Association*, the service is more competent than could be rendered by an individual medical man; the expense to the community is no greater. The fee the society receives for this work is devoted to maintaining headquarters for the organization and a library, and any surplus which may accrue will be used to provide greater facilities and equipment for all medical practitioners who are members of the organization.

STREPTOCOCCAL INFECTION BY THE NASAL AND BUCCAL PATHS.*

BY

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PENRITH.

IT is interesting to trace the recognition of the nasal and buccal areas as points of incidence of infection. From 1885 to 1890, in the early days of bacteriology, many varieties of unclassed and unnamed bacteria were demonstrated in sections of decayed teeth and by needle culture from teeth cavities. Later came Hunter, with his researches on pernicious anaemia, which he attributed to absorption from drain infection, septic teeth, or septic mucous membranes connected with teeth, producing a subacute or chronic systemic bacterial infection. Later it was accepted that frequently after an attack of acute tonsillitis there followed in about fourteen days a more or less subacute rheumatism. This pointed to the tonsillar pharyngeal mucous membrane as an area of infective incidence. Then came the recognition of pyorrhoea with its strepto-bacillus and its importance as a possible cause of many diseases, prominently rheumatic diseases. We know of cases of acute streptococcal poisoning from Ludovic angina types, also from septic tonsillar abscesses, sometimes associated with infectious diseases, frequently not; also of cases of septicaemia following tonsillar or turbinal manipulations. We have accessory sinus suppurations due to streptococcal infection, and cases of rheumatic fever sometimes following excision or enucleation of the tonsils too soon after rheumatic tonsillitis. Again, in association with influenza epidemics, at odd times and places we meet with cases of streptococcal pneumonia, primary and secondary, with a high mortality; and, most important of all, a definite recognition and classification has been given within the last few years to the infective endocardial conditions.

The question I wish first to discuss is the path of infection of these various systemic conditions and the prominent part played by the nose, nasopharynx and throat, and the lymphatics and veins associated with these organs.

Paths of Infective Distribution from Nasal, Nasopharyngeal and Buccal Membranes.

Lorrain Smith has strongly emphasized the question of the incidence and distribution of any and all infections; what determines the selective distribution of organisms to any particular organ or organs? We do not know why streptococci from the mouth or nose should select the fibrous thickened cardiac valve-cusps for attack, as in subacute infective endocarditis, or why tuberculous infection in some cases should select the suprarenal glands, ignoring the nearer and larger organs. Rosenow and others in America have recently demonstrated the possibility of duodenal and gastric ulcers, appendicitis and colitis, being due to streptococcal infection from the mouth and teeth. Many of these diseases are possibly merely local craters in a general blood infection.

Venous and Lymphatic Drainage.

The mouth venous drainage is mainly by the pterygoid plexus and facial veins to the internal jugular vein and so into the circulation, and from the tongue directly by lingual veins into the internal jugular vein. There are also connexions with the pharyngeal venous plexus. The teeth venous drainage passes from the inferior and superior alveolar veins into the pterygoid plexus and facial veins and thence to the internal jugular vein. The mouth lymphatics drain to the submaxillary, submental and parotid lymph glands, whose efferents pass to cervical lymph glands. The tongue lymph glands drain from the sides and middle of the dorsum to glands at the carotid bifurcation. The teeth lymph drains to the submaxillary, submental and parotid lymph glands.

The nasal venous drainage is mainly to the pterygoid plexus from the spheno-palatines in the spheno-palatine foramen, also importantly connected with ethmoidal tributaries of the superior ophthalmic veins and tributaries of the angular vein at the bridge of the nose. Infection might pass this way into the orbit or to venous sinuses as the ophthalmic veins enter the cavernous sinus and the angular veins are connected with the anterior end of the superior sagittal sinus. The nasal external lymph vessels pass to parotid and submaxillary lymph glands, and some few to the superficial cervical lymph glands. The muco-periosteum anteriorly drains externally to the submaxillary glands and posteriorly to the superior deep cervical glands and the lateral retro-pharyngeal glands. The nasopharyngeal venous drainage is mainly spheno-palatine, etc., into the pharyngeal plexus and thence to the internal jugular vein. The nasal lymphatic drainage is to superior deep cervical lymph glands, and some to the retropharyngeal lymph glands—hence arise retro-pharyngeal abscesses.

The palatine tonsil lymph vessels pierce the pharyngeal wall laterally and end in glands on the internal jugular vein below the posterior belly of the digastric at the level of the angle of the jaw. The venous connexion of these regions with the meninges is brought about by the drainage into the venous pterygoid plexus, which receives (1) emissary veins through the foramen ovale from the cavernous sinus, and (2) connexions from the inferior ophthalmic vein through the inferior orbital fissure. A circle is thus formed by the pterygoid plexus, nasal veins and other connexions, with ophthalmic veins and the superior longitudinal sinus, the ophthalmic veins entering the cavernous sinus and emissary veins passing to the pterygoid plexus.

Bacteriology of the Nasal, Nasopharyngeal and Buccal Mucous Membranes.

Broadly speaking, the nasal healthy secretion is non-bacterial. The sinuses if healthy are sterile, the vestibule is usually bacterial and sometimes pathogenic, containing varieties of staphylococci and micrococci and streptococci. In 26 cases of healthy mucous membrane, Lewis and Turner found streptococci in 6, staphylococci in 13, and pneumococci in 4. In an unhealthy nose and nasopharynx the three prominent bacteria are streptococci, staphylococci and pneumococci in varying strains, together with at times the influenza bacillus and certain putrefactions and coryzal bacilli, etc. All nasal inflammations are due to pathogenic organisms, either virulent, or capable, if avirulent, of being stimulated to virulence by chills, traumatism or debility; hence the onset of acute sinus abscesses after coryzal colds and sore nose conditions in extreme asthenia during pulmonary tuberculosis, typhoid fever, etc.

The nasopharyngeal and mouth varieties of organisms are much the same as the nasal, and are derived from food, water, and air. Teeth show organisms on the surface of dentine, and also in the deeper tissues. Mouth acids are always a result of bacterial action; they decalcify teeth, and so start caries; thus in deep dental caries we find streptococcal varieties along with the *Bacillus necrodentalis*, etc. There are many varieties of bacteria in the mouth—fermentative, pathogenic, etc. Accessory sinuses are sterile if healthy. If unhealthy, they usually show streptococci, staphylococci, and pneumococci, with catarrhal bacteria, and sometimes the *Bacillus coli communis*; in other words, the same varieties of bacteria as are found in the buccal and nasal cavities. In a hundred cases investigated (Lewis and Turner) 75 per cent. showed streptococci, 74 per cent. showed pneumococci, and 70 per cent. staphylococci, with occasional *Bacillus diphtheriae* and *Bacillus influenzae*, etc. These details are from the research works of Lewis and Turner, Reynolds, Fraser, Ritchie, etc.

Antral suppurations are 58 per cent. nasal in origin, 30 per cent. of these beginning by influenza attacks; 14 per cent. only are coryzal in origin, 37 per cent. are due to infection from teeth, and 2 per cent. are traumatic (Lewis and Turner). Streptococci are more numerous in chronic than in acute sinus suppurations, in the proportion of 80 per cent. to 60 per cent. Thus from nasal, nasopharyngeal and buccal cavities the above pyogenic organisms, together with Pfeiffer's bacillus, pneumococci, meningococci, and tubercle bacilli, are capable of passing to the brain, probably by venous channels, and producing such diseases as suppurative, influenzal, pneumococcal, and epidemic cerebro-spinal meningitis, also probably acute poliomyelitis and tuberculous meningitis, tuberculous and septic cervical glands; and, by way of the Eustachian tube, middle-ear disease and mastoid infection; while in the general system by absorption through the lymphatic channels of mouth and nose and nasopharynx, pneumonia, pernicious and septic anaemias, infective endocardial conditions, rheumatoid arthritis, etc., may be established. The main paths of infection are the lymphatic channels, but probably venous to the meninges. Broadly speaking, the same infective chief organisms—namely, the streptococci, staphylococci and pneumococci—are found in the nasal, pharyngeal and mouth mucous membranes, and by way of the Eustachian tube the

* Presidential address, Border Counties Branch, British Medical Association, September 23rd, 1921.

same organisms may infect the middle ear and the mastoid cells. They may infect the brain cavity, as previously described, but probably only by venous routes, as only efferent lymphatics from the brain have been demonstrated.

It is not necessary to describe cases such as suppurative meningitis, middle-ear disease, mastoid abscess, Ludovic angina types, acute septic tonsillitis, or acute accessory sinus suppurations. These are all direct and acute and call for direct surgical treatment chiefly. Let me now rather briefly describe the course of streptococcal pneumonia, subacute infective endocarditis, pernicious (Addisonian) anaemia, and rheumatoid arthritis, which are more indirect, subacute and purely medical conditions giving very unsatisfactory results by all known treatment up to date.

Streptococcal Pneumonia.

In what may be called primary acute streptococcal pneumonia there is usually severe deep central pulmonary pain referred to the deep subclavicular region. Distress is severe, with a general early toxic appearance, a rapid pulse of 120 or more which remains high though the temperature may be remittent, while delirium is frequently early. Respiration from the first day runs to 30 and upwards, sputum is not typically rusty and viscid, and dullness is only comparative, with marked diminished breath sounds and much confused moist crepitations. If these cases survive the first five days they often fail to complete hepatization with its dry tubular breathing, but they continue more bronchopneumonic with increasing myocardial weakness, with frequently progressive infection to other parts of the lung, such as centre to apex to base, which in a week or ten days later may pass to the other lung.

The usual termination in this migratory form of pneumonia is death. This was the type of pneumonia I first saw in 1893, in an epidemic of influenza which broke out in the *Caledonia* training ship at Queensferry. The first symptoms in most cases were followed in twelve hours by delirium, and often death inside of two days. The same type of pneumonia characterized the devastating influenza epidemic of 1918–19. In the *post-mortem* examinations of the 1893 cases we usually found numerous areas of what would be best described as bronchopneumonia, but sometimes both lobar and lobular, with liquid purulent centres from which we cultivated streptococci and other unclassed organisms. Secondary streptococcal pneumonia is well known in regard to septic surgical and puerperal cases. The Johns Hopkins reports on epidemic pneumonia in the American army in 1918 state that it was of the above type, all cases showing streptococci and some also the influenza bacillus (30 per cent. only).

Let me now describe a few cases showing the unexplainable selective distribution of the streptococcus in the general system.

Subacute Infective Endocarditis.

This is found developing in endocardial lesions of long standing, especially in incompetency of the aortic or pulmonary valves. The disease, first described by Osler in 1908 and Horder in 1909, was thoroughly detailed by Cotton in the BRITISH MEDICAL JOURNAL of December 4th, 1920, and again described and discussed, chiefly by Horder and Libman, at the British Medical Association meeting of 1920. It is a remarkable fact that rheumatism and syphilis attack healthy heart valves, whereas subacute infective endocarditis only attacks primarily diseased valves of rheumatic causation; hence it is suggested that we should endeavour to prevent this dread ailment by specially immunizing rheumatic valvular diseased patients against the *Streptococcus anhaemolyticus*, the main cause of the disease. This is advised by Horder and Libman. It affects patients from 15 to 50 years of age. It grafts on the fibrous lesions in the cusps, sometimes on the lesions on septum or edges of a patent ductus, and thus sometimes you have little or no murmur to guide you. It is well marked but subacute and insidious in its early advance, so much so that many cases carry on their ordinary work as before for several months of an illness ranging from about six to eighteen months.

A man aged 49 at the age of 7 had an obscure rheumatic attack of seven weeks' duration; I sent him to Sir James Mackenzie in 1908 suffering from pulmonary valve incompetency probably due to the illness at 7 years of age. He stated that in April, 1920, he began to have what he thought were recurrent malarial rigors, having had malaria several times in South America, between 1909 and 1915. He consulted no one, but went out to the Argentine on business, as he did yearly from July to November. He noticed that he was losing weight in September, and also noted a rise of temperature at night. In the early part of October he had a very bad epistaxis so severe that he went to the British Hospital, where his nose was plugged. He had blood examinations for malaria, syphilis, tubercle, etc.; no organisms were found, but no blood cultures were made. He was advised to return to London at once owing to the great heat. He arrived in London on December 8th, and came under the care of Dr. Robert Hutchison. His nose was cauterized at once. Blood cultures were then taken, and all of them showed *Streptococcus anhaemolyticus*. There was marked loss of flesh; the heart showed a loud basal murmur, there was oedema of the legs, intermittent septic temperature, pulse rate 106 to 120, unequal, irregular and soft; a large palpable spleen and petechial crops on the upper arms, forearms, legs, and neck, venous engorgement of the neck, sweating and variable pains in the legs, back, and joints. On arriving in Cumberland on December 30th I found, additional to these, slight clubbed fingers, with painful areas on the palmar aspect of the finger ends and over the great trochanters. The heart was enlarged fully two inches beyond the nipple line, with a diffuse heaving impulse. The spleen margin was three inches below the ribs. There was marked septic twitching of the muscles of fingers and toes. The urine showed blood cells with hyaline and granular casts. The urine was also deficient, with albumin, but only a slight trace; his complexion was chlorotic, with pink malar patches. He showed rapid progressive emaciation, very fickle digestion, constipation, and a moist middle furred tongue.

I got Professor Gulland to see him, and we again examined his blood, which now revealed no organisms. By blood count the red corpuscles were 2,800,000, and the haemoglobin 55 per cent.; the colour index was 0.9; white corpuscles gave 3,300; there was a definite glycogen reaction, septic proof. The differential count of the white corpuscles gave: Small lymphocytes 11.3, large lymphocytes 1.7, polymorphs 86, and eosinophiles 0.3 per cent. There was only a slight poikilocytosis, but marked rouleaux formation. The case steadily got worse with frequently recurring emboli to the kidneys, brain, lung, and spleen. He died from gradual exhaustion by toxaemia on February 3rd, 1921. I would reckon his full term of illness at about ten months.

The curious points to note were that his cardiac murmur never appreciably altered, and that petechiae came in frequently increasing crops; the embolic disturbance of the kidneys gradually lessened the urine, but did not markedly increase the albumin. I had no *post-mortem* examination, but these cases usually show recent vegetations, soft and friable, grafted on the cusp regions and the septal wall—hence the emboli—a large spleen with infarcts, swollen and soft, slight nephritis of the parenchymatous type, with destroyed glomeruli and many infarcts; the lungs are usually oedematous at bases, the streptococci usually numerous in the soft cusp vegetations, but sometimes are shut in. The main early symptoms to look for are: Gross valvular disease of the cardiac valves, pallor, enlarged spleen, and clubbing of the finger-tips; some pyrexia—aortic regurgitant cases show it most, mitral disease alone rarely shows it. There is a marked increase in the incidence of this disease.

Pernicious Anaemia.

In pernicious (Addisonian) anaemia we have a systemic infection characterized by intense haemolysis with alteration in size and shape of the red corpuscles; chlorotic appearance, no emaciation, no temperature variations unless in some post-puerperal and post-traumatic cases. Under arsenical treatment we get frequent recoveries, with the reds increasing from as low as 30 per cent., and haemoglobin from about 30 per cent., to nearly normal, only to be followed by relapses again and again, until sickness and diarrhoea, indicating intense infection of the gastric and intestinal mucosa, develop. This, unless checked by serum or vaccine treatment, rapidly produces death, accelerated by myocardial weakness.

Rheumatoid Arthritis.

In rheumatoid arthritis, or more correctly, peri-arthritis, we again have a systemic infection with joint swellings, progressive, variable and painful. It is usually primarily associated with agencies which lower the general health, hence we must remember to raise this in conjunction with other treatment. Of course we again wonder why the causative bacteria in the general infection select the joint structures as their principal area of activity.

TREATMENT.

(*a*) General to all. Inasmuch as all these nasal, antral, buccal, and nasopharyngeal infections are due to unhealthy mucous membranes, etc., the first treatment, if at all possible, should be to eradicate all possible unhealthy nasal conditions—sinus polypi or suppurations, adenoids, tonsils, and teeth, not forgetting septic or tartared plates, but I must advocate conservatism as to teeth.

(*b*) In streptococcal pneumonia. In addition to usual hygiene, nourishment, stimulants, medicines, etc., anti-

streptococcic polyvalent serum may help; it will certainly do no harm. Stock vaccines are dangerous, and are not held to be sound practice. If an autogenous vaccine can be prepared in very small initial doses, good results may occasionally be got, but it should be carefully used.

(*c*) In infective subacute endocarditis. In addition to hygiene, nourishment and stimulants, the only treatment with any chance of success seems to be a vaccine (autogenous) or horse serum; antistreptococcic and similar vaccines are useless. Even vaccines show no record of value. Horder and Libman's suggestion to adopt preventive measures in all cases of cardiac lesions of inefficiency by immunizing patients with vaccines of *Streptococcus anhaemolyticus* (or *viridans*) is sound, and the only hope so far.

(*d*) In rheumatoid arthritis. Much can be done by steady perseverance in raising the general health by diet, clothing, exercise, and climate. Guaiacol carbonate, salol, and quinine salicylate help to eliminate the rheumatoid poison. The urine odour is some guide to this elimination. Iron as iodide with malt and arsenic is useful in improving tissue tone. Radium, in waters, promises good results. Electric and thermal treatments have their partial successes, but vaccines are giving more hopeful results on autogenous lines, being prepared from cultures from the teeth, throat, faeces, or urine. Phylacogens prepared from rheumatic streptococci, etc., I have had experience of, but cannot speak of any success. The disease may be due to several infections; if you can find the definite organism, or organisms, autogenous vaccines would possibly do well.

In conclusion, it is evident that we know very little as to the incidence, varying virulence, and selective distribution of pathogenic and pyogenic bacteria. There is a great field of research open to the collaboration of anatomist, bacteriologist, pathologist and dental surgeon. We in this Border Counties area miss much of the clinical picture in difficult and obscure cases through want of a local pathological department. As to treatment, we must have confidence in future research, so that our treatment may become less empirical and general, and more scientific and accurate.

THE END-RESULTS OF SANATORIUM TREATMENT OF TUBERCULOSIS:

A RECORD OF SEVENTEEN YEARS' SANATORIUM WORK.

BY

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THE results of sanatorium treatment of patients from the industrial classes have recently been the subject of a good deal of criticism. We propose to publish figures setting forth up to date what has happened to patients admitted to Kelling Sanatorium between 1903 and 1919, and to let these figures speak for themselves. One of us (W. J. F.) has devoted a great deal of time to keeping in touch by continual visits and letters with all our old patients. The only claim we make for this publication is that our patients have perhaps been followed up more closely than is practicable in larger cities, or with more shifting rural populations.

Between 1903 and 1919 sanatorium treatment was given to 3,220 patients. Of this number 460 have been lost sight of, so there remain for consideration 2,760 patients, whose fate at the end of 1921 is here given:

Treated at sanatorium from 1903 to 1919 ...	2760
Living in 1921	1125 = 40.7%
Dead	1635 = 59.2%

Our patients on admission were classed as follows:

Class I	1118 = 42.3 per cent.
Class II	801 = 29.0 ,,
Class III	841 = 30.4 ,,

Before comparing these figures with those published by Dr. Noel Bardswell in the November issue of *Tubercle*, and in his memorandum to the London Insurance Committee, we must explain that we have been obliged to adhere to our original classification.

Dr. Bardswell's * Class I included only 25 per cent. or less of the total number of applicants, but his definition of this group is limitation of physical signs to the apex of one or both lungs, and the apex is considered as that part accessible to examination in the supraclavicular and supraspinous fossae. We quite agree with this restriction for Class I cases, but in the present communication that class includes cases whose physical signs denoted the involvement of an area of lung not exceeding that of one lobe, provided that severe constitutional symptoms and complications were absent.

In regard to ultimate results according to classification on admission to the sanatorium, Dr. Bardswell also emphasizes the great importance of the presence or absence of tubercle bacilli in the sputum. We are unable to make this distinction with our cases. In an immense majority the tubercle bacillus was demonstrated in the sputum; in the remainder we only concerned ourselves to obtain other unequivocal evidence that the patient was affected with tuberculosis of the lung.

The next table shows the different results according to the patient's classification on admission:

		Living.	Dead.
Class I ...	1118	724 = 64.7 %	394 = 35.2 %
Class II ...	801	274 = 34.2 %	527 = 65.7 %
Class III ...	841	127 = 15.0 %	714 = 84.8 %

If, therefore, we confine ourselves to the consideration of the more favourable class of applicants for treatment, instead of a mortality of 59.2 per cent. we get a mortality of 35 2 per cent. for the nineteen years. It is interesting to contrast these figures with those of Dr. Bardswell. His first class were, as we have seen, more strictly selected and their mortality was about 30 per cent., but his period embraced only four years. The excessive mortality which occurs during the first few years after discharge from the sanatorium is a point to which we shall refer shortly. The real crux of the matter, however, is the durability of the restorations of health obtained by sanatorium treatment. The next table gives the percentage of our patients now known to be living and to have died, arranged in their classes and according to the year of their discharge from sanatorium. We would repeat that our Class I was too broad and included a number of cases that we would now place in Class II.

Percentage Discharged.

Years.	Class I.		Class II.		Class III.	
	Living.	Dead.	Living.	Dead.	Living.	Dead.
1903–1905 ...	44.0	56.0	14.0	86.0	4.3	95.7
1906–1908 ...	54.5	45.5	20 2	79.8	8.8	91 2
1909–1911 ...	56.8	43.2	18.5	81.5	8.4	91 6
1912–1914 ...	58.0	42.0	36 5	63.5	14.4	85.6
1915–1917 ...	61 7	38 3	43.9	56.1	21.3	78.7

Of our Class I patients who left the sanatorium between 1903 and 1908, so long ago as thirteen to nineteen years, about one-half are, therefore, still alive. The crucial period is the first four or five years after treatment, and of those who survive this time a large proportion maintain their ascendancy over the malady for an indefinite number of years. This point is forcibly brought out by the next table, which gives the percentages of deaths occurring in five-year periods subsequent to discharge from the sanatorium.

Of those that died, death occurred as follows:

Within 1 year	in 6.0 per cent.
Within 1 to 5 years	in 57.6 ,,
Within 5 to 10 ,, ...	in 23.0 ,,
Within 10 to 15 ,, ...	in 9.2 ,,
Within 15 to 20 ,, ...	in 2.9 ,,

Of all the patients who died after receiving sanatorium treatment, the average length of time between the appearance of the first definite symptom and death was just over five years. Publications which dwell on the number of deaths which occur within a few years of leaving the sanatorium give, in our opinion, an unnecessarily gloomy aspect of the story.

* This classification is that adopted by the London County Council Public Health Department after consultation with the Tuberculosis Department of the Ministry of Health.

The immediate general improvement and the definite control of important symptoms brought about by sanatorium treatment are not called in question. We are concerned, however, about the proportion of patients who relapse soon after resuming their ordinary modes of life. In our conflict with consumption the part played by the sanatorium must, in our existing state of knowledge, be considered satisfactory, but the treatment needs to be commenced earlier and finished differently. The two directions in which reforms must be made for the purpose of securing more lasting recoveries are those of earlier diagnosis and better organized after-care. The advantage of placing the patient under treatment at an early stage of the malady is testified to by the records of all sanatoriums. Our first class embraced numbers of patients whose signs were reproachfully obvious and extensive, and yet about half of them have lived for fifteen years or more, mostly able to do some kind of work.

When we appreciate the supreme importance of early diagnosis the classification of cases of pulmonary tuberculosis deserves much consideration. We welcome Dr. Bardswell's proposal as marking a distinct advance in what we should aim at, for classification is used not only to provide convenient headings for the grouping of cases. His Class I, as defined above, represents a stage of the disease beyond which it should be our aim to let no patient go before he is caught and sent to a sanatorium. Dr. Bardswell's wide experience in connexion with the London Insurance Committee is that only 25 per cent. of applicants for treatment are Class I cases. In a communication we made to the BRITISH MEDICAL JOURNAL (August 24th, 1912, p. 409) concerning over 1,000 patients, we stated that eighteen months was the average time allowed to elapse between the first obvious manifestation of the malady and the application for sanatorium treatment.

There has certainly been improvement in this all-important direction of earlier diagnosis and treatment. The increasing numbers of expert tuberculosis officers who are at the service of the practitioner in the search for early cases must bear fruit. It was a great move when facilities were made for getting the sputum of any person examined, and as more and more advantage is taken of the public laboratory the practitioner will detect a larger proportion of his consumptive patients in their early stages. Pulmonary tuberculosis should be thought of whenever a cough cannot be otherwise satisfactorily accounted for. We are sure that a number of febrile illnesses of obscure nature owe their origin to tuberculosis. The systematic observation of the temperature in the latter part of the day is now made easier, thanks to the larger number of visiting nurses. A slight degree of fever in the afternoon for day after day, with no symptom perhaps beyond a little tiredness or loss of weight, is very suggestive of tuberculosis. Supposing there is no sputum and the diagnosis cannot be clenched by an examination of that for the bacillus, there is now radiology to be appealed to. In the hands of an expert the evidence of an *x*-ray examination of the chest may in a large proportion of cases be accepted as proving or disproving tuberculosis. We are certain from our experience that in every centre *x*-ray examination should be available for the diagnosis of doubtful cases.

A history of certain previous illnesses may arouse the suspicion of existing pulmonary tuberculosis. It is increasingly realized that pleurisy in the absence of pneumonia, rheumatism, septicaemia, or nephritis, must be regarded as tuberculous. Every patient who has had tuberculous pleurisy should be given a course of sanatorium treatment with a view to preventing the subsequent possible involvement of the lungs. In our cases of pulmonary tuberculosis there was a definite history of antecedent pleurisy, which had been apparently recovered from, in no fewer than 22.4 per cent. Undoubtedly to this number might be added others who had suffered from unrecognized or forgotten pleurisy. According to some observers, 40 per cent. of patients who have had primary pleurisy eventually develop pulmonary tuberculosis. There are good grounds, therefore, for giving all these patients the advantage of a precautionary course of sanatorium treatment.

It is contended by some writers nowadays that certain tuberculous manifestations have the effect of rendering the individual immune to pulmonary tuberculosis. Glandular affection, for instance, is stated by some to be always of bovine type, and to protect from lung disease. But of our patients with pulmonary tuberculosis 4 per cent. had previously suffered from glandular abscesses, and our strong impression is that this understates the frequency of the association. In hospital and in private practice one of us (F. W. B.-F.) has seen too many cases of pulmonary disease supervening on tuberculosis of glands to be ascribed to coincidence. In some of these the pulmonary tuberculosis has been of acute type, and it has been difficult to resist the suggestion that surgical interference with the glands or their treatment by tuberculin had stirred up the trouble.

Just under 3 per cent. of our sanatorium patients had previously suffered from tuberculous disease of bones or joints. We think that this by no means represents the actual frequency of tuberculosis of lungs and of bones in the same patient. Surgical tuberculosis is excluded from the sanatorium, but amongst hospital patients it is not uncommon to find combined disease of lungs, bones, joints, and other parts. There is a well recognized form of tuberculosis in which one or both pleurae are apt to be affected with the peritoneum, and at the present time there is a patient in the Norwich Hospital suffering from tuberculous peritonitis and double tuberculous pleurisy from whom tuberculous glands had been recently removed.

Fistula in ano had occurred in only 0.5 per cent. of our sanatorium patients previous to their lung trouble, but it is, of course, more common as a subsequent event. Tuberculous disease of the eye, of the epididymis, and of the Fallopian tube were mentioned in the past histories of a still smaller proportion of our patients. It should be unnecessary nowadays to insist that haemoptysis of any amount approaching a teaspoonful, and without other obvious explanation, is to be taken as evidence of pulmonary tuberculosis, but fatal mistakes are still made about this. In a number of cases pulmonary tuberculosis is said to have followed some other malady. Influenza is given as a particularly frequent precursor, but proof of the exact nature of the illness is difficult to obtain. We would lay more stress on the point that in the light of after events tuberculosis is the possible explanation of many attacks of fever which at the time cannot be diagnosed without the assistance of the specialist in *x* rays or in bacteriology, and perhaps even their evidence may be inconclusive.

A most fruitful field for the activity of the tuberculosis officer lies in his detection of the earliest cases by the inspection of so-called "contacts." To digress, we think that the use of this word is the begging of an important question. We are not convinced that the main cause of tuberculosis is the infection of the infant or child with the tubercle bacillus from a patient. Without attempting to present the arguments on this point, we would only say that from an unbiassed inquiry into the histories of our patients, we thought there was evidence of case-to-case infection of an adult in a very few instances only. In at least 50 per cent. of our cases there was a history of tuberculosis in a parent or brother or sister. According to some writers, these were instances not of heredity, but of infection. How do we explain on this theory the commonly observed fact that one brother or sister after another in a family develops tuberculosis, though neither parent has ever shown any symptom of the disease and though the children for many years had occupied different homes. Again, it is not exceedingly rare to trace the supposed hereditary susceptibility to a parent whose tuberculosis declared itself in disease of bone, joint, or abdomen, where no obvious diffusion of the bacillus took place. Whichever doctrine we adopt we shall agree that the existence of tuberculosis in a relation or the history of certain previous illnesses in the individual would be grounds for looking at him with increased suspicion.

The second direction in which we must aim at improvement is the after-care of our patients. In regard to this the one essential point, according to our experience, is securing for all ex-sanatorium patients continuous supervision by an expert. However thoroughly the patient has been instructed in after-care at the sanatorium, a small proportion only show themselves able to follow the precepts. So manifest an indication of trouble as persistent rise in temperature the patient may have noted but may elect to disregard, or more probably the ex-patient has broken the thermometer, or anyhow has not kept the enjoined watch on his temperature. There are numberless other points which indicate whether or not the consumptive is holding his ground, but the trained eye is needed to appreciate them.

It is only at a sanatorium that the real importance of attention to minutiae is grasped, and the advantage of having ex-sanatorium patients under the continued observation of a nurse or doctor who has had this training is obvious. The generally accepted rules of sanatorium treatment have been strictly followed by us, and continued experience has led

to little modification. From the first the patient's exercise took the form of useful work. For more than a year tuberculin was given systematically to a certain group of the patients, but we were not favourably impressed by it.

There has been a farm colony on a small scale in Norfolk for the last eighteen months, and the experience gained there has been most instructive. Generally speaking, the way in which the men's healths have been maintained, or more commonly improved, while they followed some useful occupation, has been highly encouraging. Some of the colonists came to us with the sputum already free from tubercle bacilli, and with signs of only past mischief. With only one or two exceptions these men have gone steadily forwards, and under the conditions of healthy housing, of good feeding, and of regulated work have required little attention. But the men with bacilli still present, and with physical signs placing them perhaps in Class II, have had to be watched more carefully. Even of them the majority have done surprisingly well. At the same time a week seldom passes without one of the colonists being pulled up with the threat of a smaller or greater set-back. Apart from elevation of temperature from increased frequency of pulse or from loss of weight, the jealous eye of the nurse notices loss of appetite or some other indication of lowered health. When this man is examined it may often be found that, sure enough, an extension of his disease has occurred.

Tuberculosis in all its phases is characterized by a broken course with ups and downs, and success in its management depends on any tendency to relapse being immediately detected and properly dealt with. This essential requirement in the after-care of the ex-sanatorium patient seems to us to be best met by the colony scheme. For the man whose tuberculosis has become arrested it is not of supreme importance whether his employment be out of doors or indoors. Of course it is an advantage if he can spend twenty-four hours each day in the fresh air, but it is of more importance to provide that the number of hours and the arduousness of the work be strictly regulated according to the man's ascertained capability.

Some years ago we got out figures for the purpose of comparing the after-results in our ex-sanatorium patients, according to their resumption of an indoor occupation, to their resumption of an outdoor occupation, or to their changing from indoor to outdoor work. Our statistics showed, however, no striking differences among the three groups. We know that there are many factors to be taken into consideration, such as the healthiness or the reverse of the workroom, the home conditions, the amount of the earnings, and the consequent sufficiency or scarcity of good food, and chiefly whether or not the individuals are worked beyond their strength. Our agricultural labourers, for instance, have not yielded good after-results. Their working hours are spent in the open air, but we know that their toil is arduous, that they are often badly housed, and have been badly fed. On the other hand, the few master farmers who have passed through the sanatorium have mostly continued to do well. Presumably they were able to choose their kind and amount of work, and, of course, they were able to live well.

While indoor work as such is not necessarily harmful, so long as it is not too strenuous, there is information in regard to certain industries which marks them as unfavourable for the ex-sanatorium patient. In Norwich, for example, the clerk of the City Insurance Committee finds that, of 439 men applying for sanatorium benefit, 33.5 per cent. were working in boot factories, and that of 297 women 20.2 per cent. were thus employed. Our sanatorium patients who were forced by circumstances to return to the boot factories have done no better than we should have expected. They are unfitted to take their places beside able-bodied men and to work full time at top speed and perhaps under unhealthy conditions. The experience at Papworth and elsewhere shows, however, that the consumptive man can do remunerative work in the model factory, so long as his exertions are adjusted to his physical powers.

Dr. F. Stanley Tinker suggests the institution of municipal workshops, the men going backwards and forwards from their homes, and working under medical supervision. There may be other solutions of the problem, but we are convinced that for the first five years at least the patient with pulmonary tuberculosis should be kept under close and expert supervision. Such work should be allowed as is found to be compatible with the retention of his ascendancy over the disease. He must be relieved of anxiety about the maintenance of himself and his dependants, his housing must be seen to, and there must be no difficulty in securing for him return to the sanatorium from time to time if his malady reasserts itself. The difficulty of such provision is, of course, the financial one, but unless this difficulty is overcome part of the expenditure on sanatoriums is thrown away. We know that it is possible not only to prolong the lives of these men, but to make them useful members of the community.

HAEMORRHAGIC COLITIS.

BY

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THE following two cases, which, in view of the fact that haemorrhage and the resulting severe anaemia were the leading symptoms, I have ventured to term "haemorrhagic colitis," were in the King Edward VII Hospital about the same time under the care of Dr. Mitchell Stevens, to whose courtesy and to that of Mr. Cornelius Griffiths, who operated on the first case, I am indebted for permission to give this account.

CASE I.

The patient, a housemaid aged 37, stated that for fourteen days she had passed a quantity of blood and mucus in the motions, which averaged five a day. She had had an attack of "dysentery" at Regina, Canada, in 1917, and two similar attacks subsequently. When examined on October 26th, 1920, the temperature was normal. The faeces contained blood, mucus, and pus cells, and *B. coli*. An autogenous vaccine was prepared and administered. At Dr. Mitchell Stevens's request I examined her with the sigmoidoscope, but was unable to get the instrument past the pelvic brim. This was largely owing to the continual flow of blood which obscured the view. The pelvic colon had a granular appearance, and in the upper part there were numerous papillary elevations, the mucous membrane bleeding at the slightest touch. No definite ulcers were seen, but the appearance at the upper part of the pelvic colon suggested carcinoma to me.

On November 28th, 1920, Mr. Cornelius Griffiths opened the abdomen by a median subumbilical incision and drew out the iliac colon which was found to be thickened. A portion of the wall was removed for examination and reported to be haemangiomatous. There was not, however, any localized growth but a diffuse thickening of the mucous membrane. A faecal fistula was established. For a month the temperature was irregular, averaging 100° to 101°. Blood and pus passed from the colostomy opening and from the anus, and staphylococci were found in the urine. The Wassermann reaction was negative.

On January 14th, 1921, Mr. Griffiths closed the fistula, and in May she was discharged to a convalescent home, all symptoms having cleared up.

CASE II.

This patient, a clerk aged 21, was admitted under the care of Dr. Mitchell Stevens on January 17th, 1921. He stated that for a month before admission he had passed large quantities of blood from the anus, and that he had passed blood also in small quantities for eighteen months previously; he suffered no pain. He had had no previous illnesses, lived in a mining district, and had not been abroad. The rectum was washed out, and the returned fluid contained blood, pus and mucus. On January 20th, at Dr. Mitchell Stevens's request, I passed a sigmoidoscope, but I could not get it past the angulation at the pelvic brim. The appearance was almost exactly the same as in the previous case. There was a continual flow of blood from the granular and friable mucous membrane of the pelvic colon. He was extremely anaemic and emaciated, and Dr. Mitchell Stevens felt that immediate surgical intervention was needed; the opinion we formed was that he probably had a polypus or multiple adenomata in the colon.

On January 26th, 1921, I opened the abdomen by a median subumbilical incision and drew out the iliac colon. Its wall was thickened and firm; the para-colic lymph glands were enlarged and two were removed for examination. A portion of the wall of the colon was also removed, and the report on this was that it showed a haemangiomatous condition of the mucous membrane, and the glands showed simple inflammatory hyperplasia. I passed a sigmoidoscope as far as the splenic flexure. The mucous membrane simply presented a granular appearance and intense engorgement and bled at a touch. There was no ulceration. As his condition was very bad, I fixed the loop of iliac colon in the wound and established a colostomy with a good spur. He was very collapsed after the operation, but with rectal saline and glucose he came round, but for two days vomited a good deal. The colostomy discharged pus and mucus freely, with small amounts of blood. It was washed out with saline and with collargol, and horse serum and calcium lactate were administered.

A blood examination on February 2nd showed haemoglobin 65 per cent.; red blood cells, 3,640,000; white cells, 16,000; the differential count gave polymorphs 76 per cent., small lymphocytes 10 per cent., large lymphocytes 6 per cent., eosinophils 3 per cent., myelocytes 5 per cent.

On March 16th a blood examination gave the following: Haemoglobin, 55 per cent.; red blood cells, 3,280,000; white cells, 8,000: polymorphs 54 per cent., small lymphocytes 44 per cent., large lymphocytes 2 per cent.

The first count showed a high-grade secondary anaemia with a moderate leucocytosis, probably a post-haemorrhagic one; the second, with a higher anaemia, appeared to show a relative lymphocytosis.

Washings from the rectum yielded a thick deposit of pus; epithelial and connective tissue cells were obtained, and a few *Entamoeba coli*.

From a swab of the rectal mucus *B. pyocyaneus* was obtained in almost pure culture, and a vaccine of this was administered. Although *Entamoeba coli* is now generally held to be innocuous, yet, as some authorities hold that all intestinal amoebae are potentially pathological, he was placed on Fowler's solution by Dr. Mitchell Stevens.

The amounts of blood passed were quite small, but as the anaemia was increasing and he appeared to be steadily going downhill, with Dr. Mitchell Stevens's permission I decided to perform appendicostomy with a view to securing a thorough flushing of the whole colon, and this I did on March 16th, although his condition appeared so bad that my house-surgeon did not expect him to return from the theatre.

He was washed out from the appendicostomy opening daily with saline, and from then on steadily improved; indeed, the change from the condition of extreme pallor and emaciation was remarkable. In a few weeks his face had filled out and his colour had improved, and he expressed himself as feeling well. There were three factors that may have contributed to the result—the administration of arsenic (which may have got rid of the amoebae), the *pyocyaneus* vaccine, and the more thorough flushing of the colon by means of the appendicostomy.

On June 26th I attempted the closure of the colostomy by Coffey's method. Owing to the presence of much prolapse and a very considerable spur the operation was difficult. Every attempt was made to get a thorough invagination, several tiers of catgut being used to secure inversion of the bowel wall, and ample drainage was provided, but four days later faeces came through the drainage tube, which passed down to the peritoneum. This, I think, was due to angulation and the presence of the spur, which prevented the onward passage of intestinal contents into the distal segment. At the present time some faecal matter is passed naturally, but most comes through the abdominal wound, and a further operation may be required to close this. In other respects his condition is very satisfactory. A blood examination made July 20th gave: Haemoglobin 65 per cent., red blood corpuscles 4,500,000, white blood corpuscles 8,000—polymorphs 60 per cent., small lymphocytes 37 per cent., large lymphocytes 1 per cent., eosinophils 1 per cent., and basophils 1 per cent. The only organisms found in the stools were *B. coli*; the entamoebae and *B. pyocyaneus* had disappeared.

These two cases differed from tropical dysentery in that there was no ulceration, and neither the bacillus of Shiga or the *Entamoeba histolytica* could be found. There was a remarkable absence of pain in each. The mucous membrane presented a uniform granular appearance, which in the second case was observed to extend from the rectum to the splenic flexure, and which probably involved the whole lower bowel. This case was much the more severe, and we did not expect him to recover. I attribute a large share in the result to the appendicostomy, and if I had a similar case to treat which did not respond to medical methods I should perform appendicostomy, and place a large flatus tube in the rectum, avoiding opening of the bowel, which in each case was done for diagnostic reasons, owing to the difficulty in investigating the colon higher up with the sigmoidoscope.

I may conclude with a few remarks on Coffey's method of closure of colostomies. I have tried this on four other occasions. In three, after some suppuration of the abdominal wound, a satisfactory closure ensued. In one a further operation was required. It is perhaps a safer operation than resection, but where there is considerable prolapse and extensive spur formation, it is difficult and unsatisfactory. The obstacle of the spur may be got over to some extent by the use of Balfour's rubber tube for a week or two before operation, but even then I think that the necessary invagination of the antimesenteric border is likely to cause distortion and angulation of the gut. In the second place, it does not seem to be in accord with the first principle of intestinal surgery—namely, that secure union depends on the apposition of serous surfaces; as the operation is extraperitoneal this cannot be obtained. There is, however, probably less risk to life, and in suitable cases, with little prolapse, it is worth doing. China clay emulsion was also given during the later part of the treatment, but he was then recovering and its effect could not be judged.

Since the above was written, I am informed that the first patient suffered a relapse, but is now well again.

The second patient has also had a slight relapse, again passing a moderate amount of blood and mucus, and is at present being treated at his home by injections of an autogenous coli vaccine. I hope shortly to be able to close his colostomy.

NOTE ON THE INTRAPLEURAL PRESSURES IN ARTIFICIAL PNEUMOTHORAX.

BY

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I SHOULD like to call attention to a feature which has not, as far as I am aware, already been noted and which deserves the consideration of those called upon to supervise the treatment of artificial pneumothorax cases. I refer to the alteration which takes place in the intrapleural pressures with a change in the position of the patient.

This fact was first observed in the case of a patient in whom a right-sided artificial pneumothorax had been established. The patient always experienced a desire to cough when lying on the left side (the position in which all former refills had been carried out) and requested to be allowed to lie on his back. Puncture was made in the anterior axillary line in the fourth interspace and the manometer recorded pressures of −2+5, whereas the pressures reached at the previous refill fourteen days before were −2+4. Fluid was suspected, but the patient had been unconscious of splashing and physical examination had not suggested its presence. On rolling the patient into the left lateral position the pressures at once fell to −4+2.

Subsequent cases were investigated to ascertain the constancy of this variation, with the results shown in the table.

Position of Artificial Pneumothorax.	No. of Refill.	Pressures before Refill.		Quantity of Gas Introduced.	Pressures after Refill.	
		Lateral.	Dorsal.		Lateral.	Dorsal.
				c.cm.		
Case 1: Right-sided, complete, with a small quantity of fluid in the pleura	18	−2+4	+2+6	100	±0+5	+5+12
	19	−2+3	+1+6	150	±0+6	+5+10
Case 2: Left-sided ...	20	−4−2	+2+5	1,000	+3+5	+8+12
	21	−3±0	+2+7	800	+3+5	+10+12
	22	−1+1	+8+12	700	+6+8	+12+14
	23	−2±0	+3+6	700	+4+8	+11+13
	24	−5−2	−2+5	700	+3+5	+4+10
Case 3: Right-sided, with fluid	36	−2+7	+4+14	100	+10+17	+14+22
Case 4: Left-sided ...	7	−8−2	−4+2	500	±0+4	+2+7
Case 5: Right-sided ...	18	−3+2	±0+4	450	+6+10	+8+12
	19	−3±0	−1+2	500	+3+8	+6+11
	20	−4+2	−2+4	500	+6+10	+9+13
	21	−4+2	±0+4	425	+6+10	+9+13
Case 6: Right-sided ...	12	−4+2	−2+5	350	−2+4	+4+8
	13	−6±0	−4+3	450	−2+4	+2+8
	14	−6±0	−4+4	550	−2+4	+3+8
	15	−10±0	−6+2	850	−3+3	+2+6
	16	−8−2	−6+2	600	−2+3	±0+6

In the columns headed lateral the pressures are those taken with the patient lying on the side of the functioning lung.

Figures are not available to demonstrate the pressures in the erect posture, but, in the few cases in which this has been investigated, it has been found that the pressures approximate to those found in the dorsal position.

A consideration of the pressures in the above cases will show that there is a constant rise in the pressures when the patient is moved from the lateral to the dorsal position. The importance of this observation will be recognized when any attempt is made to re-establish a previous pressure. This obviously can only be done with certainty when the patient occupies the same position on both occasions. Emphasis must therefore be laid on the fact that any statement of intrapleural pressures must be accompanied by a statement of the position of the patient.

Further, while the amount of the rise varies not only in different cases, but in the same case, it will be noted that the pressures are frequently doubled. As refills are usually conducted in the position in which the pressures are lowest,

the subsequent rise must not be lost sight of in cases which show extensive cavitation, and in which there is a possible danger of rupture of the cavity.

No attempt has been made to explain or correlate the reasons for the alterations of pressures, but it is obvious that the weight of the heart, the abdominal support of the diaphragm, and the increased action of the opposite lung all play a part. That the alteration does take place is sufficient to warrant attention.

A CASE OF MEGACOLON.

BY

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THE following case presents many points of interest; amongst others, the colon was the largest of which I have seen any record.

A man, aged 32, was admitted to the Leeds General Infirmary in August, 1918, for distension of the abdomen and faecal incontinence. He was born with an imperforate anus, for which an operation was performed some twenty-four hours after birth. The rectum was opened at a depth of 3/4 in. from the perineum and the edges stitched to the skin. The subsequent history was one of continual trouble with the bowels. He never had his bowels moved without aperients or enemata, and even these did not prevent him having attacks of partial obstruction, for which he was, on several occasions, readmitted to the infirmary and relieved by vigorous treatment with enemata. After such relief he returned home, gradually to fill up again, and so on. Vomiting and pain were quite exceptional. His complaint was, as on this occasion, of enormous distension and difficulty with the bowels, and when this was at its worst he would get a form of diarrhoea with incontinence. He worked fitfully, having often to absent himself for treatment, and when at work he had constantly to be attending to himself.

On admission, in August, 1918, the abdomen was enormous, like that of a woman with the largest imaginable ovarian cyst; the parietes were tense, and had a glazed appearance. There was no visible peristalsis and no evidence of distinct coils. He was in no real distress except from the continuous oozing away of faeces. The rectum was found to be full of great hard masses of faecal material, and, though the anal margin felt rigid with scar tissue, yet it was possible to insert two fingers easily and without hurting him. I thought the condition was one of interference with colon action, as one sees in Hirschsprung's disease, but complicated by the possible interference with control of defaecation, owing to the anal condition.

I decided, therefore, to do a colectomy, but to empty the bowel to some degree in the first place by colostomy. In this, however, I was not very successful, for though he was much improved by the colostomy it was impossible to create a spur owing to the enormous size of the colon, and the opening very soon began to close. Consequently in November I removed the sigmoid and upper part of the rectum, together with the colostomy opening. The sigmoid was enormous, the two limbs being the size of an average male thigh, and the apex of the loop was beneath the liver. The wall was markedly hypertrophied. The same condition extended down into the rectum in its whole length, but above it ended almost abruptly at the lower end of the descending colon. Proximal to this point there was a little dilatation, but no noticeable hypertrophy.

I brought the cut end of the descending colon to the surface to act as a permanent colostomy, and stitched up the upper end of the rectum, which was about 6 in. across. In the ordinary way I might have tried stitching the two ends together, but owing to the suspicion under which the anal canal lay I decided the best interests of the patient would be served by a permanent colostomy.

I have seen the man frequently since, and he says he has never felt better in his life; he has lost all the features of autointoxication which were so marked before, and he has been at work continuously since. He has no inconvenience from the colostomy, for by careful dieting he can easily regulate his bowels so that they act once a day, and at a time when it is convenient for him to attend to them. Immediately after the operation considerable difficulty was experienced in evacuating the rectum; now he has no trouble with this at all.

The segment of bowel removed was 2 ft. 6½ in. long, 22 inches in circumference, and weighed 11 lb.

I have labelled this as a case of megacolon because I am not sure whether it should be classed as a case of Hirschsprung's disease, or as one of obstruction due to the scarring resulting from the operation for the imperforate anus. There has never been anything which one could call an obstruction at the anus since I have seen him, though, of course, the natural elasticity of the part was absent, and I could not satisfy myself of the presence of a sphincter. On the other hand, apart from the anus, the pathological appearances were exactly those of Hirschsprung's disease, and the existence of the condition from birth conforms to either alternative.

GASTRO-ENTEROSTOMY, AND SOME DIETETIC RULES.

BY

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As a confirmed gastro-enterostomist of some years' standing, I wish to express admiration for Mr. Paterson's lucid exposition, at a recent meeting of the Royal Society of Medicine, of the rationale of this operation, and my personal experience justifies the statement that this gentleman's verdict fits the bill as to the application and success of the procedure.

Also, I was deeply interested in reading Mr. Walton's dark roll of surgical iniquity, which I am sure will command profound study by all who are responsible for the efficient training of surgeons. At the same time, I do not wish to infer that, although I happened to escape from inclusion in above roll, I have not had my share of compensatory post-operative trouble, the principal one being a two-year plague of diffuse, dense, iodine peritoneal adhesions, some of which caused intestinal obstruction, with three deaths. The abandonment of iodine skin disinfection and the return to old friends, alcohol mercurial lotion, and careful adjustment of isolating towels in and around parietal wounds by Mr. Marmaduke Sheild's through-and-through retractor silk sutures, relieved a situation which was really becoming intolerable.

It is not my desire to occupy space in reiteration of what I have already published on this subject, further than to mention that anyone may peruse my ideas on the operation of gastro-enterostomy by referring to the *Lancet*, October 26th, 1912, and it is possible that the method therein described may now merit some attention.

I think it a duty to repeat that in my opinion the employment of clamps in gastro-enterostomy violates the rudiments of operative surgery, in that they entail a needless traumatic insult to the delicate visceral structures and a fatuous, if not culpable, obfuscation of potential haemorrhage from many important vessels which must be injured in the course of the necessary incisions. I have no hesitation, judging from the number of fatalities which occur from post-operative haematemesis, in craving the attention of surgeons to what I maintain is a preventable catastrophe, and moreover, I consider it a disgrace to surgery and a parody on human reason that the term "haemostatic through-and-through stitch" should ever have been countenanced in the surgery of the stomach. I strongly recommend anyone who has not time or nerve openly to tackle the dozen or so bleeding vessels which usually demand ligature before the insertion of the inner circular catgut suture to transfer such cases to a colleague gifted otherwise.

Reference to my paper "Operating to the clock" (BRITISH MEDICAL JOURNAL, December 21st, 1918) will probably remove the suspicion that I am of those who discount the importance of time, yet I wish to emphasize that I am unable to follow the mentality that admits, in gastric surgery, of the repudiation of the cardinal rule—see the bleeding point and tie it.

With all deference I beg of the authors of operative text-books to give these remarks some reflection, in the hope that they may see their way to delete some of the irons which now adorn their illustrations, and to bring a needle and thread into better perspective, with an artery forceps and ligature well in the foreground.

There is another item which has for years baffled my sense of comprehension—the inordinate haste to get these patients out of bed, and to mock their doubly lesioned stomachs by the early administration of solid food. The introduction of this—apart from direct and peristaltic traumatism, apart from the very negation of Hilton's law, and apart from the fact that it takes at least fourteen days for *restitutio ad integrum* of any solution of continuity in the human body—is a physiological anachronism, in that it induces the gastric glands to pour forth an abundance of acid secretion at the moment when the organ is extra-handicapped with an additional six-inch gastric sore, just when, by all the rules, an alkaline state is necessary for its salvation. Recently I was gratified to read that Dr. Moorhead, of Dublin, had called attention to this matter, and I hope his opinions will exact the consideration which they always deserve.

It has been my plan for many years, a few days after operation, to hand over these cases to the sister's personal care, with the injunction that they shall be kept in bed and

on a rigid milk diet (in addition to mist. carbonatis, *ter in die*) until the twenty-eighth day. Before discharge each one receives instructions as to what he should eat and drink during the ensuing year—invariably some alcoholic stimulant being recommended at lunch and dinner.

It may not be reckoned irrelevant if I touch on the prophylactic treatment of this too prevalent malady, and in order to avoid prolixity, or getting out of depth, I will briefly mention "ten commandments" which I have found of great service to candidates for gastric ulcer who perforce have to eke out a sedentary existence, with comparatively little out-door exercise.

1. As a general rule indulge only in two meals a day, and take only two plates to each meal—meat with vegetables, and fruit, with or without light milk pudding, or cheese.
2. Masticate thoroughly, have any bad "stumps" extracted.
3. Take, in moderation, whatever alcoholic beverage is most congenial to your stomach—that is to say, which does not, hours afterwards, create excessive acidity or a feeling of "liver."
4. Whenever practicable, rest mind and body for one hour after a meat lunch in order to allow the digestive machine to get ready before an extra call for blood is made by brain or muscles.
5. Allow at least a six-hour interval between midday and evening meals.
6. Do not pollute the refreshing cup of afternoon tea with bread-and-butter, cakes, scones, or other decomposing fermenting carbohydrate messes, which deprive the unfortunate stomach of all chance of a rest before it has to tackle its dinner problem.
7. Abjure the use of any form of alcoholic refreshment except at your lunch and dinner table.
8. Whenever feasible take a stroll in the evening after dinner, and sleep in a room with a large open window—not in a draught—so that the blood may be properly oxygenated during the eight hours of repose.
9. Make it a creed to take regular morning exercise: begin with a hard snap of shadow-boxing (commence with twenty and work gradually up to 100 double clouts) in order to extend the heart muscle and elastic tissue of the lungs; follow with physical exercises, then have a cold shower bath, and promptly conclude with towel drill before some open door or window.
10. *Dulce est desipere in loco*, but not too often.

I am aware that I tread on delicate ground in advocating the general moderate use of alcoholic drink with meals. I do so, not inflated with any exalted idea of preparing any medium for the gradual evolution to a future conception of some incomprehensible super-race, but to endeavour to make the best and most agreeable of what we are, and to lubricate the cranking gear of life through its chequered and allotted span by applying the lessons derived from thirty years' experience in medical practice.

In response to the "Hallelujah" cantations of ascetic mummers whose psychological diapason is solely comprised of one hyphenated falsetto—to eradicate an abuse it is necessary to lop off the use—I have no compunction in affirming that the rational dietetic use of the fermented juice of the grape, of the hop, and of some cereals, is a godsend to man's digestion, and that while the indiscriminate use or bestial abuse of the same unquestionably speeds down to the grave, universal total abstention would tend, in a comparatively short cycle of time, to depopulate the earth, and, in all probability, would compel whatever might remain with human form ultimately to seek refuge in the simian freedom of an arboreal existence.

The die is cast and the test is now being applied on a large scale: may I beg my readers and their descendants carefully to note and compare, in the respective wet and dry zones, the future incidence of tuberculosis, cancer, lunacy, diabetes, resistance to infection, addiction to the drug habit, and frequent and prolonged tours abroad for business, health, and pleasure purposes?

A COMMITTEE appointed to consider a suitable memorial for the soldiers of Madison County, New York, has recommended the erection of a tuberculosis hospital to be maintained, under the provisions of the State county law, at the expense of the county.

DURING 1921, according to the *New York Medical Record*, medical practitioners in New York State issued a total of 946,700 prescriptions for alcohol; in the Chicago district the number was 2,189,000.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

BLINDNESS FOLLOWING INFLUENZA.

INTO my consulting-room in South Africa some years ago was led by two friends a man who was said to be blind. He had had influenza. Examination showed only a low degree of hypermetropic refractive error. Deciding there was nothing to prevent the patient seeing, I put up his correction and told him to read the letters on a board which was opposite him. This he promptly did, to his delight and to the mystification of his friends. I told him he did not need any glasses as he was an outdoor worker. He walked out of my room unassisted. Presumably the blurring—which a low error of hypermetropia will produce—had been exaggerated by the weakness of the ciliary muscle resulting from influenza. That he thought he was blind was obvious. Not only was he led into my room, but he was actually on his way to book his passage to England to see an eye specialist.

Kilnhurst, nr. Rotherham. CHARLES J. HILL AITKEN, M.D.

DUODENAL ULCER IN A NEWBORN INFANT.

ON February 9th I attended a Mrs. X. in her second confinement, after an interval of six years. After a normal labour she was delivered of a healthy female child, weighing just under 8 lb. Respiration was not well established at first, but after a few minutes the child breathed well and was a healthy colour. The first fourteen hours of life were uneventful, and the child appeared to be normal in every respect. There was then sudden haemorrhage from the mouth and the passage of somewhat dark blood per rectum. Calcium lactate with 1 minim of a 1 in 1,000 adrenaline chloride solution was given by the mouth, and rectal salines (1 oz. every hour) administered. For several hours the child appeared to improve, but twenty-eight hours after birth she died after a profuse haematemesis and melaena.

I was fortunately able to get the consent of the father for a *post-mortem* examination. The stomach was full of blood clot, but healthy. About half an inch from the pylorus there was a small duodenal ulcer rather less than half the size of a threepenny-piece. The duodenum was full of blood clot. There was no history of haemophilia or syphilis.

I unfortunately did not preserve the specimen, as at the time of the *post-mortem* examination I did not think of publishing the case.

Braintree. H. G. K. YOUNG.

CASE OF TRYPANOSOMIASIS FROM WEST AFRICA CURED BY ANTIMONY.

So much has been said and written about special methods of treatment and cures of trypanosomiasis by serum therapy and so-called specific drugs that it seems justifiable to bring forward a case of my own to add to those quoted by Low and Newham, which were under the care of Manson and Daniels.

The patient served in the British Expeditionary Force in the Cameroons in 1915; while there he contracted malaria quartan and subtertian, *Filaria loa*, with its embryonic form *F. diurna*, and *Trypanosoma gambiense*. After many adventures he reached England, and came under my care in the Dreadnought Hospital from February to November, 1916. At one time trypanosomes were very abundant (4,000 per cubic millimetre), with cyclical outbursts, the general condition being bad. Atoxyl controlled but did not eradicate the infection. Under intravenous injection of antimony oxide 1/2 grain the blood was rapidly cleared. For a year he was under constant supervision in the laboratory at Greenwich, where treatment was continued. In May, 1917, he was again admitted into hospital for a further course of antimony, as there was a definite relapse, which rapidly cleared up. A single trypanosome was found in 1918, but none since; films have been examined monthly. He had a course of ten injections each spring in 1918, 1919, and 1920, of 1/2 to 2 grains of antimony tartrate. This patient is now (1922) doing work, and is well but for the Calabar swellings; he has filaria in his blood and a high eosinophilia. The strain of *T. gambiense* is being maintained in guinea-pigs, and has reached the sixteenth passage.

The case may now be claimed as a severe infection of *T. gambiense* cured by repeated injections of antimony.

London, W. PERCY BASSETT-SMITH, K.C.B., C.M.G.

Reports of Societies.

THE ACTION OF ARSENOBENZOL PREPARATIONS.

AT a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, on February 14th, with Dr. W. LANGDON BROWN in the chair, a communication was made by Dr. H. H. DALE and Major C. E. WHITE on an experimental method of determining the therapeutic efficiency of "914" preparations. In Dr. Dale's absence through illness, the investigation was explained by Dr. Burn, his colleague. In 1915 the Board of Trade asked the Medical Research Committee to undertake the biological testing of compounds of "606" and "914" which were being sold in this country. When "606" was originally made in Germany Ehrlich himself pointed out that it was essential that some biological test should be imposed on account of the continual variations in toxicity. It seemed even more important, if "606" was controlled biologically, that "914" compounds should be similarly controlled, because no similar test had been proposed for these latter preparations when they were prepared and issued in Germany. The test carried out by the Medical Research Committee was a simple toxicity test, in the shape of an injection into the tail vein of mice, and if with a given dose a certain proportion of mice survived, the batch was considered satisfactory. In the first year or so after the introduction of these substances, preparations were brought forward by manufacturers in this country which closely resembled the German products, some of which only just reached the borderline of the toxicity test, while others easily passed the test. During the war there was little opportunity of obtaining information whether changes in the process of manufacture led to any deterioration in therapeutic value, but afterwards reports came to the Salvarsan Committee that the clinical results obtained with "914" were not so good as previously. Investigations were thereupon carried out under Dr. Dale's direct supervision, in which mice infected with trypanosomes were taken as the test. The precise number of trypanosomes per cubic millimetre could be counted; at a certain point in the infection an injection of neo-salvarsan was given, and it was found that very large doses would clear out all the trypanosomes in twenty-four hours, a smaller dose would do the same in forty-eight hours, and in other cases seventy-two hours was required. If trypanosomes did not disappear in seventy-two hours they did not disappear at all, and the mouse rapidly died. The minimal curative dose was taken as the dose which removed organisms from the peripheral blood of all mice within seventy-two hours or less. It was found that preparations of "914" at first differed greatly in their power to cure trypanosomiasis in mice, and that the German "914" had a much lower minimal curative dose than the original British preparations. The British manufacturers thereupon set to work to produce something which should be more like the German product, and as a result of this investigation they considerably reduced the minimal dose, so that it now compared favourably (as was shown by tables) with the German preparations. Certain clinical results—not many, owing to the difficulty of obtaining them—had been tabulated, and the correlation between these and the experimental results with the same given set of preparations proved to be fairly close. A test was now regularly imposed on preparations of "914," not merely for toxicity, but for therapeutic value.

Dr. MACKENZIE WALLIS at the same meeting read a paper in which he referred to the toxic action of arsenobenzol compounds on the liver, and described investigations with the object of discovering whether such compounds, when administered to patients, produced changes in the liver sufficient to give rise to disturbances of liver function without producing any obvious signs and symptoms of such toxic action. As a result of the trial of many testing methods, he had come to the conclusion that the tests which were of value were three in number: the levulose tolerance test, the blood lipase content, and the cholesterol content of blood. He described each of these, and said that the levulose tolerance test served to show that the maximum effects on the liver after injections of novarsenobenzol were exemplified from three to three and a half months after the last dose, and that six months after the last dose the liver had regained its function in regard to levulose. The greatest effect of hepatic damage occurred three months after the last treatment. The lipase test proved to be much simpler in its application and quite as valuable in the results obtained, and here again it was found that the maximum effect was exemplified three months after the last treatment. Of the various tests, he advocated the adoption of the lipase test as the one which could be universally applied.

Dr. T. H. G. SHORE gave an account of the effect of arsenobenzol treatment on the kidney and liver as he had seen it in *post-mortem* examinations which he had conducted at Etaples during the war. His observations related to 23 cases in which preparations of the "914" group had been used, and in 11 cases the death apparently was the result of jaundice. From such clinical history as he had been able to gather he found that these people did not develop their jaundice until three weeks or a month after their treatment had been completed, and when they did develop it they died very rapidly. Unlike Dr. Turnbull in some similar investigations, he found that the liver in these cases was devoid of fat, but he found fat in the kidney, and he believed that the fat which ordinarily accumulated in the liver by the time the cases reached him for *post-mortem* examination had got into the kidney for excretion.

In the subsequent discussion Mr. J. E. R. MCDONAGH referred to 67 cases of jaundice seen at the Lock Hospital, in nearly all of which the jaundice had appeared in the twelfth week after the last injection. Sir P. BASSETT-SMITH referred to the importance of testing all these powerful drugs by biological processes. Dr. SPENCE alluded to the most definite reduction of liver efficiency in catarrhal jaundice. Professor A. J. CLARK referred to some cases in which it had been possible to detect the effects of large doses of salvarsan given intravenously upon horses which had to be destroyed, and the *post-mortem* signs were almost identical with those of arsenical poisoning, as if the arsenic had been taken by the stomach. Dr. W. E. DIXON deprecated any talk of salvarsan as though it were a special kind of drug; it was only arsenic, and the difference between these organic arsenical compounds was a question of their dissolution more easily in one tissue than in another.

THE IDEAL PSYCHIATRIC CLINIC.

AT a meeting of the Section of Psychiatry of the Royal Society of Medicine, on February 14th, with Dr. BEDFORD PIERCE in the chair, "The ideal clinic" was the subject of a discussion which is to be continued at the next meeting.

Dr. HELEN BOYLE, in opening, urged that an out-patient department alone would not suffice for a psychiatric clinic. Beds were necessary, often because the patient's domestic surroundings interfered with treatment, and also because to carry out the various forms of treatment required in many cases continual observation and supervision. The clinic should be established in the town rather than in the country. In the town it would have the advantage of association with a big general hospital; also it would be more accessible to out-patients. The advantages of quietness in the country were more imaginary than real, and perhaps were more easily dispensed with by mental patients than by others. Such patients often found the country boring and irritating; while, on the other hand, the streets and shops in town were so various and interesting that the most introverted patient must to some extent respond to these stimuli. The clinic building should consist of an administrative block with observation wards on each side, and certain association rooms for gymnastic and social purposes. There should also be smaller wards for four, five, or six patients, which was a better grouping than two or three patients. The solitude of single rooms would seldom be found necessary. The patients eligible should include children, for these disorders should be tackled at an earlier stage than hitherto. In the United States and Canada children who got into the hands of the law were often referred to such institutions. She thought that it would militate against the best interests of the clinic to seek powers for compulsory detention. The locked door suggested force and mystery, induced fear in the mind of the patient, hindered treatment, and damaged the tone both of patients and staff. The most happy thing that could be said to any incoming patient was that he or she was perfectly at liberty to go home. On the other hand, a few patients were comforted by locked doors.

The treatment (Dr. Boyle continued) should include, in addition to all hydrotherapeutic and physical methods, occupational therapy, which offered a safety valve for emotional

strain. One American clinic even went so far as to allow a patient to learn embalming because that was his fancy. Games and concerts were of use, and so various and subtle was the curative treatment of a mind diseased that she had found a visit to the penny bazaar of service in the re-education of patients. Religion was very important, and there should be a chapel in the clinic, simple, beautiful, and non-sectarian. When the clinic was in association with a general hospital the medical staff would be chosen in the same way as the hospital staff. There should be part-time men and women practitioners, aided by house-physicians. The members of the staff should have real working experience of a mental hospital. Probably both out-patients and in-patients would have to be fewer in number in relation to the number of doctors employed than was the case in general hospitals. The nursing staff should be selected with great care as to temperament and personality. She looked forward to the time when they would prescribe people as they prescribed drugs, assigning to this patient a vivacious nurse, and to that a quiet one. Every clinic, also, should have social service workers who would go and collect the data with regard to the patients. Contrary to what might be expected, she found that in America such workers were very popular.

Dr. W. A. POTTS did not agree with placing the ideal clinic in a general hospital; that was not Utopian, but pre-Victorian. With a few exceptions, the staffs of general hospitals did not understand psychotherapy or the new psychology.

Dr. HUBERT BOND questioned Dr. Boyle's postulation of a clinic with out-patient and in-patient work under the same roof. The out-patient department would do great good, but, unless the general attitude towards mental disorders underwent a change, it would be impossible to get the out-patients without disguising the nature of the institution. The successful clinic would be part and parcel of the general hospital, and would bear its name, although it would be a distinct unit. When the moment came for these clinics to mature he hoped that the bogey of certifiability or non-certifiability would not be raised.

Sir ROBERT ARMSTRONG-JONES gave some account of an out-patient mental department which he carried on for two years at St. Bartholomew's. It had been useful, but he could not help a feeling of disappointment. The people who attended were largely chronic epileptics. The incipient insane would not see himself as others saw him. The mental hospitals were the proper places in which to treat incipient cases, and he did not like the suggestion that the experience and organization accumulated there should be put on one side.

Dr. R. H. COLE supported the idea of a clinic away from the mental hospital. It seemed to him that his duty in an out-patient department was to decide where a given patient should be located; he was quite certain that in that way he had been able to prevent a good many cases from drifting into mental hospitals.

Dr. CRICHTON MILLER said that Dr. Boyle had omitted to speak of the biggest element in the problem—the amount of time the treatment took. At the Tavistock Clinic, in the first year of their work, the average length of each interview was forty-nine minutes. At a large hospital there must be a certain amount of red tape, and red tape killed psychotherapy. The most valuable work could be carried on at a clinic while the patients remained at their work during treatment.

The discussion was adjourned until the March meeting of the Section.

X-RAY TREATMENT OF CANCER.

AT a meeting of the Oxford Medical Society a paper on recent advances in the *x*-ray treatment of cancer was read by Dr. H. K. WARD, who last July had had the opportunity of seeing the work being done at the Universitäts Frauenklinik, Erlangen, Bavaria. He gave a brief description of the technique elaborated by Professors Seitz and Wintz, at Erlangen, the principles on which it was built up, and the results obtained by it in the treatment of fibromyomata and malignant disease.

Dr. Ward said that Professor Wintz, although not the first worker in this field, had made a number of improvements both in the apparatus used and in the measurement of *x* rays. The apparatus was a powerful one, consisting of two coils, and giving a 16-in. parallel spark gap. The *x*-ray tube had an ingenious mechanism which automatically kept the vacuum constant, and it was claimed that, working with very high tension currents, this tube lasted longer on the average than the Coolidge tube. Professor Wintz early discarded the Kienböck strip and the Sabouraud pastille for measuring *x* rays, the former as unreliable for rays of different hardness, the latter as not giving sufficiently accurate graduations. He then developed the iontoquantimeter, invented originally for this purpose by two Frenchmen, Villard and Szilard, and had used this method ever since.

Professors Seitz and Wintz had laid down what they call the optimum therapeutic dose for various diseases. If the erythema dose was called 100 per cent. the dose that the ovaries must receive to sterilize the patient was 34 per cent., the dose to kill carcinoma cells—the so-called carcinoma dose—was 90 to 110 per cent.; the sarcoma dose was 80 per cent., and so on. It was stated that if carcinoma cells received 40 per cent. they were stimulated and grew faster than ever. If the rectum received 135 per cent. a severe diarrhoea resulted, and if the intestine received 150 per cent. it would ulcerate and perhaps perforate. The figures might not be quite accurate; indeed, other workers did not entirely agree with them, but it was at any rate the right method of tackling the subject, if controlled by accurate measurement of the rays. It aimed at giving a definite dose in a definite region, and had introduced a much more scientific method of *x*-ray therapy than had obtained in the past. The above figures at once stimulated the *x*-ray worker to elaborate new techniques to bring these doses to bear on diseased tissues, and limited him in other directions because of the destruction of normal tissues.

In the treatment of fibromyomata the Erlangen technique was to sterilize the patient by giving each ovary 34 per cent. of an erythema dose. The haemorrhage soon ceased, but the tumour only began to shrink some months after the treatment. There appeared to be very few contraindications, and, according to the authors, even accompanying tubal inflammations subsided in time. It was interesting to note that, if a dose of approximately 28 per cent. be given the ovaries, a temporary sterilization often resulted—that is, menstruation ceased for some months, to return again later, the explanation being that the more mature Graafian follicles succumbed, but the immature follicles were more resistant and survived.

The Erlangen school had had more experience with the treatment of cancer of the cervix uteri than with any other cancer. They began by combining radium with the *x* rays in the treatment of this cancer, but later discarded radium as unnecessary. They concentrated six erythema doses upon the cervix, using three ports of entry in front and three behind. Unless great care was taken, the rectum lying just behind the uterus would receive a dosage which was often sufficient to excite a very severe diarrhoea. For another reason no more than six erythema doses should be given at one sitting; the blood even with this dose suffered considerably, showing notably a destruction of red cells and lymphocytes. However, the blood recovered in six weeks' time unless the disease was far advanced, with pronounced cachexia and anaemia. In these cases the blood never recovered, and the patients invariably died.

They devised a technique which they called the Roentgen-Wertheim, in memory of the two men on whose work it was ultimately founded. This technique was carried out as follows: (1) Treatment of the cervix uteri with six erythema doses concentrated on the cervix uteri. (2) Treatment of the parametria. This could not be carried out at once, because six erythema doses is a very severe dose of *x*-rays from which the blood alone takes some weeks to recover. The authors had fixed on six weeks as the interval which must elapse before a second set of six erythema doses was given to one parametrium. As before, three ports of entry were used in front and three behind, all concentrated on the parametrium. After another six weeks' interval the other parametrium was treated in a similar fashion. The results with this technique had been extremely promising so far, and the authors claimed a very much larger percentage of successes than with any other known form of treatment. Indeed, they said that cure was almost certain if the disease was not too far advanced. Naturally they did not claim to be able to cure cases with metastases and profound cachexia and anaemia. Their experience of cancer of the breast was limited. Here the problem was a different one. Instead of a centrally situated tumour which could be approached from all sides there was a tumour lying close underneath the skin whose base was at most 3 to 5 cm. below the skin. If the breast was poorly developed it was impossible to use even two ports of entry because the two bundles of rays would cross just beneath the skin, and the tissues would be burned. The axillary glands

were of course treated as well, and given the carcinoma dose. No actual results had been published, but they were understood to be quite promising. The same could be said for carcinoma of the vulva. In this case the technique was the same as in a cancer in a poorly developed breast. In cancer of the stomach the results were not very promising; it was indeed as unfavourable a form of cancer to treat with *x* rays as it was by operation. It was often diagnosed only late in the disease, when there were already metastases in the liver. Another complication was that the tumour itself was generally quite close beneath the skin, while the glands lay deeper. The results were not good, but were understood to be improving as more experience was gained.

With regard to the treatment of sarcoma, the problem was at the same time simpler and not so simple. A sarcoma formed metastases by way of the blood stream, and might, while still quite small, have already given rise to metastases in the lungs. Carcinoma, on the other hand, spread more slowly by the lymph channels, and its extension was held up temporarily by the lymph glands, so that it remained local for some considerable time, thus lending itself to local treatment by *x* rays. The disappearance of the main sarcomatous tumour might be dramatic after *x*-ray treatment, but there might be already formed metastases in distant organs, which were beyond treatment. Nevertheless, Seitz and Wintz were of opinion that the prognosis in fairly small sarcomata was on the whole favourable.

In Dr. Ward's opinion, credit was not so much due to Krönig, Friedrich, Seitz, Wintz, and other workers for the powerful apparatus which they had devised—though this was a considerable factor in their success—as it was for their introduction of proper scientific methods into the problems connected with the dosage of *x* rays. First, the actual measurement of the rays with an accurate instrument, then the measurement of the percentage deep dose at various depths, and the study of the various ways in which this percentage deep dose could be increased; then the estimation of the optimum therapeutic dose in different diseases which should be aimed at; and lastly, the various techniques devised in order to get that dose where it was wanted without seriously injuring the normal tissues; and among these techniques the Roentgen-Wertheim technique invented by Seitz and Wintz stood out as the most promising and successful. A note of warning should be added. This method of carcinoma therapy was such an extensive one, the therapeutic dose was so near the dangerous dose, that unless the *x*-ray worker had an intimate knowledge of the apparatus, the technique, and the principles on which it was based, more harm than good might result. This was unfair to the patient, as it was to the method of treatment.

Dr. W. J. TURRELL took a more pessimistic view of the future of *x* rays in the treatment of cancer. He said that uterine cancer was less resistant to *x* rays than certain skin cancers, and this was the explanation of the more favourable results obtained. He spoke in favour of divided doses, and thought the Roentgen-Wertheim technique for uterine cancer much too risky, on account of the danger to the intestines and the general reaction produced. He put in a plea for the development of methods to sensitize the cancer cells, so that they would be killed by smaller doses of *x* rays.

FLAT-FOOT AND ITS COMPLICATIONS.

AN ordinary meeting of the West London Medico-Chirurgical Society was held at the West London Hospital on February 3rd, with the President, Sir GEORGE LENTHAL CHEATLE, K.C.B., in the chair. Mr. H. A. T. FAIRBANK read a paper on flat-foot and some of its complications.

Mr. Fairbank began by discussing the progress made in recent years in the treatment of ordinary cases of flat-foot. In children flat-foot arose as a result of congenital deformity, muscular weakness, or absence of the normal reflex postural activity of the muscles supporting the foot. In adults overwork or weakness were two of the causative factors of ordinary flat-foot. He drew attention to the work of Sherrington and others on the "postural activity" of the anti-gravity muscles, failure of which might account for the development of static flat-foot. Re-education of this reflex was necessary for its cure. Pain was conspicuous by its absence in children and most adolescents, and in these subjects a cure was usually possible. In adults, however, relief of symptoms only was the rule. He spoke warmly of the satisfactory results obtained by electrical stimulation of the muscles, especially by Dr. Murray Levick's method by which the tone of the small muscles of the foot was re-established. This treatment should be combined with suitable exercises, every effort being made to interest the patient in his treatment, the "mental effort" on his part being an all-important factor. In children, wedging-up of the inner side of the sole and heel of the boots, and stiffening the inner side of the "upper," should be employed in addition. In adults electrical treatment often gave marked relief of pain, but in addition in these cases "sole-plates" were usually necessary. These plates should be made for each individual, plaster casts being taken and carved up suitably after Trethowan's method. He described and demonstrated this method in detail. In children contracture of the calf muscles was a complication sometimes met with. This could be overcome in milder cases by stretching, while tenotomy of the tendo Achillis might be necessary in the severer forms. He mentioned osteo-chondritis of the heel epiphysis and that of the tubercle of the navicular as causes of painful flat-foot in children. The pathology of the condition was similar to that of "Schlatter's knee." Köhler's disease, or "isolated disease of the navicular," was another cause of pain in children. Lastly, he drew attention to the frequent development of flat-foot after convalescence from illnesses necessitating prolonged confinement to bed, the absence of reflex postural tone accounting for this. The paper was illustrated by numerous radiograms and plaster casts.

Mr. MCADAM ECCLES considered that all infants were born with poorly developed longitudinal arches, the arch developing as the child grew. Flat-foot in children was therefore more often due to non-development of the arch than to flattening subsequently. He agreed with Mr. Fairbank as to the efficacy of electrical treatment and the frequency of flat-foot developing during convalescence from long illnesses. He had seen a number of cases of epiphysitis of the proximal end of the first metatarsal in lads about 12 years of age the subjects of flat-foot.

CONGENITAL STENOSIS OF BILE DUCT.

A MEETING of the Pathological Society of Manchester was held on January 18th, with the President, Mr. J. HOWSON RAY, in the chair, when Dr. J. F. WARD described a case of congenital stenosis of the bile duct and patent interventricular septum.

The history of the case was that of a first child, born at term, both parents healthy. It was apparently healthy at birth, but jaundice was noticed at the age of 3 days; this soon became marked and remained so with very little variation until death. The child was first seen at the age of 5 months, when there was marked jaundice; the weight was 7 lb. 12 oz., the liver was enlarged, the spleen not palpable. There was a systolic murmur over the whole of the precordium; the pulse rate was 120 to 140; the Wassermann reaction was negative. The child was kept under observation as an out-patient until one week previous to death; the weight was then 7 lb. 14 oz. Death took place at the age of 8 months.

On *post-mortem* examination the organs were found to be deeply bile-stained. The liver and spleen were enlarged, the surface of the liver smooth; the gall bladder was small. The actual site of obstruction of ducts was not definable without injection. There was no ascites. The heart had a small opening in the upper part of the interventricular septum, but there were no other malformations. On microscopical examination of the liver there was a very slight degree of biliary cirrhosis.

The case resembled those previously described in its clinical course. There was nothing to suggest any etiological factor, but the coincidence of a congenital defect of the heart and very slight degree of cirrhosis suggested malformation of ducts rather than inflammatory stenosis.

Mr. J. HOWSON RAY showed a large renal calculus of unusual size and shape removed from the left portion of a horse-shoe kidney from a male aged 49 years. This calculus had a curious resemblance in shape to a hand with four finger-like processes, the lowest of which was tipped with a scale of phosphates simulating a finger-nail, whilst the rest of the calculus was coated with a deep reddish-brown film of urates. The lowest process projected from the dilated pelvis into the upper end of the ureter. The left kidney was little more than a shell of atrophied renal tissue, which closely embraced the calculus, and was joined by a bridge of kidney substance to the lower pole of the right kidney across the vertebral column. The right kidney was hypertrophied. The calculus weighed 3 ounces 15½ drachms. The patient at the age of 16 years was treated for stone impacted in the penile urethra. He had no further obvious trouble until the past year, and for a

little over six months had suffered from pain in stomach, constant indigestion, and flatulence, but had no pain in micturition and no increase in frequency of micturition. The calculus and left kidney were removed by the abdominal route and uninterrupted recovery followed.

Mr. J. PHILIP BUCKLEY showed a case of endothelioma of the stomach, removed from a young woman who had presented signs similar to those due to perforation of an ulcer. A partial gastrectomy was performed, with successful issue.

Mr. J. B. MACALPINE showed five urinary specimens of considerable interest, including a ureterocele, which had been removed from the lower end of the left ureter. The speaker believed that a congenital stricture was the cause of the condition in this case. A number of cystin calculi, removed from the kidney of a child, were exhibited; cystin crystals were found in the urine, and an examination of the urine of the seven other members of the patient's immediate family revealed similar crystals in three other individuals who had no symptoms. A large papilloma in the pelvis of a kidney, an extensive papillomatosis of the bladder, for which that viscus was removed after transplanting the ureters to the surface of the body, and a dissection of a case of ectopia vesicae were exhibited and discussed.

Mr. GARNETT WRIGHT, Mr. H. H. RAYNER, and Mr. JOHN MORLEY showed other cases and specimens of interest.

PULSE TRACINGS AND THEIR MEANING.

A MEETING of the West Kent Medico-Chirurgical Society was held on February 10th, at the Miller General Hospital, Greenwich, when Dr. C. O. HAWTHORNE gave an address entitled "Some pulse tracings and their meanings." Dr. Hawthorne analysed the sphygmographic wave, and by comparing its form with the sphygmometer maximum in different groups of cases argued that the pulse tracing gave no information as to the height or level of blood pressure; its message, in so far as blood pressure was concerned, was related to the endurance of pressure and to the fashion of its decline. Only in this way could be explained the fact that with one and the same sphygmometer maximum the sphygmographic pictures in different cases might vary widely in their forms and meanings, and that with similar or identical tracings the sphygmometer level might differ. The interpretation of this variety must be found in the suggestion that the sphygmometer registered the height to which the pressure rose, but gave no information of the endurance of pressure, while the sphygmograph, on the other hand, displayed the form of pressure—well-sustained or ill-sustained—but made no announcement of its numerical level.

The address was illustrated by numerous tracings and sphygmometer records in exemplification of the above argument, and by others showing the effects of various drugs on the peripheral circulation.

A MEETING of the Pathological Section of the Sheffield Medico-Chirurgical Society was held in the Pathological Department of Sheffield University on February 9th, with Dr. GODFREY CARTER, the President, in the chair, when Dr. A. G. GIBSON read a paper on the pathology of epilepsy. He urged that an attempt should be made in every case of epilepsy to discover a definite cause, and that if such an attempt were sufficiently painstaking a large number of so-called "idiopathic" cases would be found to be definitely assignable to some organic disease. Of such organic causes of epilepsy Dr. Gibson drew attention to circulatory changes, and instanced the seizures that occurred in the course of Stokes-Adams disease. He also pointed to the interesting connexion between epileptiform convulsions and the infectious fevers, and laid stress on the extreme importance of syphilis as an etiological factor in the production of the disease, stating that no case had been fully investigated until a serological examination had been carried out. Amongst the causes of epilepsy were to be found such definite entities as parasitic disease of the brain. The term "idiopathic" should be avoided when dealing with epilepsy until every possible source of recognizable etiology had been excluded. Until this had been done, simple administration of bromides was to be deplored.

AT a meeting of Glasgow Southern Medical Society on January 19th Mr. R. H. PARRY delivered his presidential address, taking as his subject "After-treatment." During the period since he was a house-surgeon the technique of surgical operations had advanced to a very high state of perfection, and methods of diagnosis had also greatly improved, but as regards after-treatment much remained to be done. He laid stress on the effects of early diagnosis in simplifying after-treatment, and showed that after-treatment, which was often apt to be regarded as drudgery, might be made a very interesting study resulting in great benefit to patients. He laid stress also on the need for closer co-operation between the hospital surgeon and the general practitioner, by whom the after-treatment ought usually to be carried out, and ended by saying that the gulf that existed between hospital treatment and that outside must be bridged. Quackery had its biggest scope in the failures in after-treatment.

Reviews.

MEDICAL PRACTICE IN THE TROPICS.

THE scope and object of *The Practice of Medicine in the Tropics*,[1] by many authorities, edited by Colonel W. BYAM and Major R. G. ARCHIBALD, the first volume of which is before us, is explained in the preface: "The primary object of the Fellowship of Medicine being to promote a closer relationship between the members of the medical profession throughout the English-speaking world, we have attempted to help this endeavour by producing a book which will serve the student as an introduction to the leading teachers of tropical medicine throughout the British Empire, in the United States of America, and in other countries where the English language is spoken." The authors believe that tropical medicine offers a particularly favourable field for the promotion of an international *entente* such as they are endeavouring to bring about. The book has been planned to include articles on diseases which are not peculiar to warm countries, but which present aspects of importance to practitioners in the tropics. Chapters on nursing, diseases of women, and the production of small-pox vaccine are also included. The authors' endeavour, they tell us, has been to produce, not an encyclopaedia, but a work of reference which will meet the practical needs of the average man in the tropics. The frontispiece is an excellent photograph of Sir Patrick Manson. The list of contributors, numbering seventy-eight in all, contains many names well known in tropical medicine, and the authors of the work are to be congratulated on their choice, which has provided representatives of every aspect of the subject. The main sections in the first volume are hygiene and minor tropical sanitation (pp. 1–238), nursing, entomology (pp. 271–494), laboratory methods (pp. 495–682), snakes and snake poisoning (pp. 683–762), and toxicology (pp. 738–855); there is also a good general index. Dr. Balfour, who is responsible for the first section, has produced a very interesting and readable article; it is abundantly illustrated, and should be very helpful to intending visitors to the tropics, warning them of the dangers to health they are about to encounter and how best they can avoid them. Entomology is fully dealt with by a series of writers, including C. Warburton, Ll. Lloyd, M. E. MacGregor, L. O. Howard, H. H. King. Here again the coloured plates and other illustrations are of a high order of merit, and contribute to an understanding of the text, which is well chosen and well written. The article on laboratory methods—a subject of paramount importance in the tropics—has been written by R. G. Archibald, the joint editor of the work. Here again a well-balanced, up-to-date article has been produced, containing all modern methods of importance, and good accounts of the examination of the blood, faeces, urine, etc.; at the end is a useful note on *post-mortem* examinations. A statement on p. 606 that the cervical glands are enlarged in infection by *Filaria perstans* is open to criticism. Why should they be? The adults live in the mesenteric tissues, not in the glands, and their embryos are in the blood stream; adenitis, when it occurs, must be due to some other infection, and not to the filaria. No mention is made of calcified filariae (*F. bancrofti*) in the tunica vaginalis and epididymis; they should always be carefully searched for as they afford evidence of an old filarial infection. When writing of multiple abscesses the small multiple amoebic abscesses are not specially commented upon, while the statement as to the diaphanous condition of

[1] *The Practice of Medicine in the Tropics.* By many authorities. Edited by W. Byam, O.B.E., Lieutenant-Colonel R.A.M.C. (ret.), and R. G. Archibald, D.S.O., M.D.Edin., Major R.A.M.C. (ret.). Vol. i. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1921. (Roy. 8vo, pp. xxii + 855; 334 figures, 35 plates. £4 4s.)

the gut in kala-azar is open to dispute. Ascaris in the larynx might have been mentioned on p. 613, and paragonimus and helminthic lesions in the brain on p. 614.

The chapter on serums and vaccines, by Colonel D. Harvey, is specially interesting, giving as it does a very clear conception of the matter; it should prove of the greatest use to the worker in the tropics. The section on snakes is written by Major Acton, I.M.S., in collaboration with Major Knowles. It is well illustrated, and contains much useful information. Dr. H. H. Scott, the discoverer of the part the akee plays in vomiting sickness, appropriately deals with vegetable and fish poisoning in the tropics. Lastly, Mr. Colles discusses the chemical investigation of medico-legal cases, an intricate and very difficult subject. It will be gathered from what has been said that the volume contains a wealth of material which will be most useful to many workers in different branches. Mention has already been made of the excellent coloured plates (35 in all), and of the other illustrations by which its pages are so profusely adorned. These lighten the tedium of reading through the text, and make the understanding of it much more easy. The standard set by this volume is high, and if this level is maintained in the other two volumes, which are to deal with the diseases proper, then the book may well become the authoritative standard reference work in English on tropical medicine.

THE ART OF GROWING OLD.

DR. LAPTHORN SMITH has written a very readable, interesting and instructive little book entitled, *How to be Useful and Happy from Sixty to Ninety*.[2] It manifests throughout the work of a keenly observant man with multiform knowledge by no means confined to matters strictly medical. The author has certainly collected ample evidence in favour of the contention implied in the title of his book. Although a large part of this work consists of concrete examples of happy and useful lives led by men and women long after arriving at sixty, and by many up to ninety or over, there is no lack of illuminating comment on the way in which they achieved success. Apart from his repeated emphasis on the generally received medical maxims concerning sobriety, early rising and going to bed, dieting, and so forth, the author's insistence on the extreme importance of physical and mental exercise appropriate to each individual case, and continued persistently without counting the years as they pass, may perhaps be said to be the chief feature of his teaching. This is not to say that the book is marked by any dull repetition, for each chapter is enlivened by fitting anecdotes, by records of the author's own experiences, and by his evident conviction of the truth of the teaching he endorses.

Dr. Lapthorn Smith dwells much on the harm of too much meat food for the old and elderly, of alcohol in any but small amounts, and of tobacco smoking generally. But in his last chapter, entitled "Axioms for the man over sixty," which is well worth studying and generally following, one of the axioms runs thus: "If you have been a smoker all your life keep on smoking in moderation, and if you have been a moderate drinker, keep on drinking in moderation (if you can get it)." In view of the author's somewhat excessive tirade against tobacco in Chapter XIII—where he surely exaggerates the number of persons who suffer from tobacco blindness, and probably of those who have disordered heart action from over-smoking alone, and thus draws the conclusion that 1 oz. a week is the limit of safety for a smoker—he is certainly to be credited with a generous exercise of his common sense and humanity when he enjoins a man over 60 "to keep on smoking." He seems not to be aware that a man who has smoked all his life and would be satisfied at 60 with 1 oz. if he could afford more, is not often to be found. Moreover, he makes no mention of the quality of tobacco smoked, a matter which general medical opinion holds, we believe, to be one of much importance.

But it may safely be said that in spite of a few other minor criticisms which might possibly be made here and there, of this book, no one could be harmed, and most would greatly benefit, by following the author's rules without doubt or quibble. We wholly agree with Sir Charter Symonds in wishing this attractive and useful volume "bon voyage" and a long one.

[2] *How to be Useful and Happy from Sixty to Ninety.* By A. Lapthorn Smith, B.A., M.D., M.R.C.S., etc. With a Foreword by Sir Charters Symonds, M.D., M.S., F.R.C.S., K.B.E., C.B. London: John Lane, The Bodley Head, Ltd. 1922. (Cr. 8vo, pp. xiv + 236; 1 portrait. 5s. net.)

INTELLECTUAL EVOLUTION.

THE book on the genesis of psychical energy[3] which Dr. DANYSZ has written is an essay in biological philosophy. It is an attempt to mark out the place man occupies in Nature, and by tracing his evolution from the simplest forms of living matter to make a guess at the future progress of the individual and the State. It is divided into four sections: the first describes the evolution of man, the second details the reactions of living matter, the third gives an account of evolution generally, and in the fourth some general conclusions are stated. In this fourth section the author attempts a forecast of the lines upon which the human race is likely to develop in the future. His work may be recommended to the general reader; it is suggestive, and illustrates the difficulty of applying biological methods to the elucidation of psychological problems.

It is impossible to give the argument of the book and to explain the author's reason for his conclusions in a few words. He is an optimist, believing that man has not yet reached the highest intellectual development of which he is capable, nor human society the organization which will best ensure the greatest happiness for the greatest number. As a good evolutionist he is no believer in the doctrine of revolution so loudly preached by some to-day; in fact, he considers that quite a number of people who believe themselves leaders of "advanced" thought are, in fact, marching into the desert at an obtuse angle with the true line of advance. But though an optimist, he thinks that progress towards a better state of society must be slow, for the process of evolution needs much time, many generations, to achieve its beneficent results. Man is distinguished from the rest of the animal world by his intellect, and it will be by the evolution of his intellect that he will advance, but he "is not, and never will be, free to evolve in a direction arbitrarily chosen." The age of reason is coming; the present epoch will be remembered in the history of humanity as that in which "the sentiments and the passions were insufficiently controlled by the reason." For Dr. Danysz the doctrines of Marx are not constructive because they do not appeal to the desire for new and fruitful research, but arouse passions whose manifestations are the more opposed to progress the less enlightened the minds affected.

The merits and demerits of socialism of various shades and of anarchism cannot suitably be discussed in a medical journal; we have merely endeavoured to give a general indication of the argument of this book because M. Danysz is a distinguished biologist, because the book is suggestive, and because the biological aspect is usually neglected by political writers to whom this essay is primarily addressed.

NOTES ON BOOKS.

PROFESSOR BERNARD'S book on pulmonary tuberculosis[4] gives, from the French point of view, a picture of the disease in its clinical and sociological aspects, and may be read with profit by medical officers of health, medical men, and nurses who have to deal with phthisical patients. Originally designed to stir the inertia of the French, who are not yet, according to the author, fully awake to the necessity for an active antituberculosis campaign in their own country, this volume may be recommended also to the tuberculosis experts of Great Britain, for it throws interesting sidelights on problems that occur in our own country just as they occur in France, and on the solutions thereof that have been found and are in working order in England but are still to seek in France. Professor Bernard is all in favour of the governmental control of tuberculosis, and we trust that his well-written volume may meet with the attention it deserves.

The book on respiratory training[5] by Dr. J. PESCHER, who, we believe, practises in Paris, is the work of a whole-hearted enthusiast; he holds that most of the organic and functional ailments of children and adults can be cured or vastly ameliorated by graduated breathing exercises, use being made of his own variety of spirometer. The book is wordy; in

[3] *La Genèse de l'Energie Psychique.* Par J. Danysz; avec une lettre-préface de J. Payot. Paris: J. B. Baillière et Fils. 1921. (Demy 8vo, pp. 312; 26 figures. Fr. 12.)

[4] *La Tuberculose Pulmonaire. Études de Phtisiologie Clinique et Sociale.* Par Professeur L. Bernard. Paris: Masson et Cie. 1921. (Demy 8vo, pp. 258. Fr. 10 net.)

[5] *L'Entrainement Respiratoire par la Méthode Spirométrique.* Applications Pratiques en Hygiène, en Prophylaxie, en Thérapeutique. Par J. Pescher, Ancien interne des hôpitaux de Paris. Paris: A. Maloine et Fils. 1921. (Cr. 8vo, pp. 287; 33 figures. Fr. 10.)

style it seems designed for the layman, but in matter it is more suitable for the medical practitioner. Rules for the application of the breathing exercises are given, and the amount of the respiratory work to be done by the patient is specified for each disorder. It would seem that Dr. Pescher expects too much of his method.

The authors of a little French book, the clinical interpretation of laboratory reports,[6] have set out in tabular form the conclusions to be drawn by the medical man from the reports he receives on the specimens sent to the pathological laboratory for examination. Comparatively little is said as to the methods employed; given his report, the medical practitioner will find in this book all the different interpretations that it may bear, or all the diseases or disorders it may suggest. At the end of the volume is a synoptic table in which the various diseases come first, and have opposite to them a list of the pathological changes in the blood, urine, faeces, and so forth, to which they may give rise. The book is well arranged and full of information, but has the fault of increasing the separation between clinical diagnosis and laboratory diagnosis that is so frequently deplored by physicians and pathologists alike.

The first number has appeared of a bi-monthly medical review entitled *Les Néoplasmes*, which is to be devoted to original articles, abstracts, and reviews dealing with the etiology, pathology, and treatment of tumours, malignant and benign. In addition to an analytical review of current literature the first number contains original articles on the red blood corpuscles in cancer, and on the treatment of cancer of the tongue. The new journal is published by Messrs. Vigot Frères, 23, Rue de l'École de Médecine, Paris, VI^e^, and the annual subscription (foreign) is 18 francs.

The name of the *Journal of Orthopedic Surgery* (Boston, U.S.A) has been changed to the *Journal of Bone and Joint Surgery*; it will be published quarterly.

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[6] *Comment Interpréter en Clinique les Réponses de Laboratoire.* Par Hugel, Delater, and Zoeller. Paris: A. Maloine et Fils. 1922. (Cr. 8vo, pp. 139. Fr. 5.)

MEDICINAL AND DIETETIC PREPARATIONS.

Phyllosan.

PHYLLOSAN is a preparation made up in tablets; each tablet is stated to contain 0.03 gram chlorophyll and 0.005 gram iron. The agents in this country state that the preparation is known by the name phyllosan in English-speaking countries, in Germany and Switzerland as chlorosan, with or without the name Buergi, and in Spain and Italy as foliosan.

The therapeutic value of chlorophyll was discovered by Professor E. Buergi, of Berne. He and his pupils made extensive laboratory experiments upon the action of chlorophyll on anaemia in rabbits, and also made clinical observations on the action of chlorophyll combined with iron in anaemia and various other diseases. Buergi[1 2 3] found that chlorophyll, when given to rabbits made anaemic by bleeding, had an action equal to that of iron in stimulating blood regeneration, and that a combination of chlorophyll and iron was much superior to either substance given alone; it was also found that chlorophyll and iron caused an increase in the haemoglobin content and erythrocyte content of the blood of normal rabbits.[4]

From clinical observations Buergi concluded that a combination of chlorophyll and iron was much superior to any preparation containing iron alone in the treatment of chlorosis and of secondary anaemias of various types. Buergi also found that a combination of chlorophyll and iron was of great value in the treatment of numerous diseases, particularly tuberculosis, cases of cardiac disease due to weakness of cardiac muscle, arterio-sclerosis, and cases of general debility. He concluded that chlorophyll acted as a general stimulant to the body tissues, and increased the vital force of the patient.

Buergi prepared a combination of chlorophyll and iron which he termed chlorosan, and this has been put on the market in England under the name of phyllosan. Phyllosan is stated to be prepared according to Buergi's directions, and is advertised in a pamphlet in which Buergi's claims as to its extraordinary therapeutic value are fully set forth.

[1] Buergi: *Correspondenz-Blatt für Schweizer Aerzte*, No. 15, 1916.
[2] Buergi: *Therap. Monatshefte*, 32, 1918, pp. 1, 33.
[3] Buergi and others: *Biochem. Zeit.*, 98, 1919, p. 256.
[4] Grigoriew: *Biochem. Zeit.*, 98, 1919, p. 284.

The obvious question at once arises as to why the administration of iron, together with the addition of green vegetables to the diet, should not produce the same effects, only at much less cost, as those produced by the administration of phyllosan. Buergi meets this objection by saying that chlorophyll is not absorbed when given in its natural form, and that it is only of therapeutic value after it has been submitted to special purification. The results obtained by Buergi's pupils agree completely with those obtained by Buergi himself, but we can only find record of one research upon the action of phyllosan which was done outside Professor Buergi's laboratory; it was performed by Dr. W. Loeffler,[5] who made extensive chemical, pharmacological, and clinical tests as to the action of phyllosan (or chlorosan), and obtained negative results. Loeffler found that the phyllosan tablets contained less than 0.003 gram of chlorophyll, and calculated that 10 grams of spinach contained as much chlorophyll as fourteen phyllosan tablets. He found that phyllosan was inferior to Blaud's pills in the treatment of anaemia, both in the laboratory and clinical tests. He considered that there was no certain evidence that chlorophyll had any therapeutic action, and argued that even if chlorophyll had a therapeutic action it was unlikely that the minute amounts present in phyllosan would be effective. These conclusions naturally evoked a lively controversy in the Swiss medical press.[6]

It is very difficult to decide on the merits of a preparation whose action is a subject of acute controversy. The chief laboratory evidence that phyllosan has any therapeutic action depends on the results of the experiments upon rabbits made anaemic by bleeding; experiments of this nature are, however, notoriously uncertain, on account of the great individual variations in different animals.

It is unnecessary to point out how difficult it is to obtain reliable evidence from clinical observation as to the action of drugs upon such diseases as chlorosis, tuberculosis, and general debility. In spite of the expressions of opinion by Buergi and his pupils quoted above, it still appears to us that the action of chlorophyll in experimental anaemia is extremely uncertain, and that the therapeutic value of phyllosan is the subject of a still unsettled controversy.

The agents for phyllosan in this country are the Chlorophyll and Chemical Corporation, Ltd., 26, Coventry Street, London, W.1.

[5] Loeffler: *Correspondenz-Blatt für Schweizer Aerzte*, No. 46, 1918; No. 48, 1918, pp. 1521, 1618; and No. 49, 1919, p 879.
[6] Buergi: *Schweizer Rundschau für Medizin*, No. 4, February 21st, 1919; *Correspondenz-Blatt für Schweizer Aerzte*, 49, 1919, p. 1604.

ABILITY IN CHILDREN.

IN the days when schools and classes were still small an observant teacher might gain a very good knowledge of the individual capabilities of his pupils, and his judgement of ability did not always correspond with the show that a pupil might make in class work or in examinations. The advantages of the direct and intimate knowledge which the teacher of a small class or a small school possessed is impossible of attainment in modern schools, where the number of pupils runs into several hundred and a class may total forty. In addition to this, the organization necessary in large schools requires that pupils should pass from form to form or standard to standard at reasonably short intervals, so that a pupil knows many teachers but few teachers know the pupil.

To make up for the loss of the old pedagogue's intimate knowledge of the ability of a pupil many endeavours have been made to measure the mental ability of children apart from the routine knowledge to which they may have attained by diligent attendance at school. This work is inseparably associated with the names of Binet and Simon, two French investigators, whose tests have been generally accepted as the basis for a standardization of tests of mentality which can be of practical value.

The London County Council, the largest elementary education authority of the country, has issued in a substantial volume[7] a series of memoranda prepared by Mr. Cyril Burt, its psychologist on "mental and scholastic tests." In the first he considers in detail the Binet-Simon scale and the practical methods of applying it; in the second he discusses the theoretical validity of the results of tests made with the

[7] *Mental and Scholastic Tests.* Report by the Education Officer of the London County Council submitting three memorandums by Mr. Cyril Burt, M.A., Psychologist on Mental and Scholastic Tests. London: P. S. King and Son, Ltd. 1921. (Med. 8vo, pp. xv + 432; illustrated. 21s.)

scale; and in the third he sets out a provisional scale of educational tests of attainments.

The school examination is a fair test of knowledge of school work, but it is a poor measure of capacity, and ignorance of school learning is no proof of defect. The argument that where attainments are meagre ability must be low will always be fallacious. Poor health, poor homes, irregular attendance at school, lack of interest in the subjects of instruction, want of will to learn them, or a higher order of diligence, of intelligence which enables the scholar to perceive their relative unimportance, are commoner causes of inability to spell or calculate than an inherent weakness of intellect or genuine defect of mind. The dull are usually backward, but the backward are not necessarily dull. To affirm the contrary would not be true, but would be nearer the truth. A high real ability does not always imply a high standard of school work. This ought to be a platitude, for history abounds in illustrations of unsuspected ability bearing rich fruit in adults who as children were reckoned indifferent scholars. Genius has laws of its own and must be left out of account, but if there were means of discovering embryo ability at an early age and giving its possessors the best advantages that our clumsy educational scheme can afford, the richness of the real capacity of the child might, it is argued, be brought to fruition without risk of such loss as must occur under the conditions at present imposed on us by pedants and doctrinarians. Similarly there are children of poor ability who struggle through the school curriculum with a difficulty that may be reflected in a diminished standard of health; were their disability discovered in time a modified curriculum would enable them to develop to the best advantage any innate qualities they may possess. Some perhaps have none, but it is waste of life and happiness, so stupid as to be wicked, to cause a boy who has sympathy with plants to waste his time in learning to spell. No really good gardener can spell English. He is too observant, too much in tune with Nature. To pass judgement upon the mentality of the child is, however, part of the duty of the teacher, and he should therefore be equipped with a knowledge of modern methods of examination of mentality, which he may learn to use within his limitations.

After discussing the standard Binet-Simon scale, Mr. Burt considers the difficulties presented by its use in England, and suggests modifications to render it better adapted to our needs, for, as Dr. Simon expressed it, "La bonne traduction est elle qui d'après l'expérience laisse l'épreuve à l'âge auquel elle est placée." Some of these tests might very well have been even further modified to suit English tastes. The picture tests are taken straight from the French originals. There are three, and all are of the most melancholy description, and very foreign to our eyes. The first is a half-tone reproduction of a drawing showing a pair of unhappy-looking individuals, man and boy, hauling at a rickety handcart laden with damaged goods. It is suggestive of a retreat in Poland. It is not even definite in its drawing, for a sharp boy of 9, on being shown it, and asked what it represented, immediately pointed to the boy's head and said: "A boy with a dog's head." And sure enough the right hand of the man and the tousled head of the boy do together make a very good head of a bob-tailed sheep-dog. It turned out on inquiry that this boy had been exercising his wits with puzzle pictures, in which he was invited to "find the villain" and the like. Mr. Burt defends the transfer of these drawings, but we must admit a preference for the alternatives introduced by other workers. The line drawings for comparison of faces, and for the discovery of missing features, are equally unpleasant. All these figures have been reproduced in many textbooks on these scales, and it is time that some drawing less pathological in appearance should be shown to the children. There is no merit in melancholy ugliness. The Porteus maze tests are not altogether free from difficulty, seeing that the response to them may be very unequal: one small boy of 7 years, who has not as yet shown any special ability, did the whole series up to that supposed to be suitable for the age of 14 years with little or no hesitation, and then asked for more. We agree with Mr. Burt on the desirability for intelligent translation of these tests, and think that he might have carried his modifications a little further with advantage.

The results of the use of these tests on London children tend to show that a mental age cannot be so definitely defined as Binet seems to have supposed. There is a very considerable overlap. "To measure intelligence by the yearly stages of intellectual growth is like measuring stature by means of a tape, where the lines that separate the inches are half defaced and the figures so broad, so blurred, and so ill centred that any one division may easily be confounded with the next."

The tests have been largely used also for the determination of mental deficiency, and it is interesting to note the results thereby obtained. The special school children (mentally defective) of London form some 1.5 per cent. of the total school population. Analysing these defective children, it is found that only one-third of them, or 0.5 per cent. of the grand total of all children, are so defective as to warrant their being classed as "institutional" cases, one-third will need "supervision," and the other third are only to be reckoned defective owing to the defects of our educational system. That is a very satisfactory fact to be elicited. The more general application of these tests seems to show that there is discernible an effort, and an effort by no means sterile, to coax and coach the milder dullards of the ordinary schools to a grade more closely fitted to their actual age, so that their acquired attainment becomes greater than their inborn ability. By contrast the children who are most retarded mentally appear still more retarded educationally; and the children with superior talent are largely kept back scholastically, depressed to a stage which answers more closely to their actual years. The essays before us unmask a strong disposition to level a child's school work up or down towards the common standard for his age. That is a very grave reflection upon the effect of standardization of educational work, and one that needs much thought.

Some of the results show that the Binet-Simon scale is less a pure test of mental capacity than is sometimes thought. Mr. Burt writes: "There can be little doubt that with the Binet-Simon scale a child's mental age is a measure not only of the plane of intelligence with which he is congenitally endowed, not only of the plane of intelligence at which in the course of life and growth he has eventually arrived, it is also an index, largely if not mainly of the mass of scholastic information and skill which, in virtue of attendance more or less regular, by dint of instruction more or less effective, he has progressively accumulated in school." If this be true of children of the elementary schools, how much more will it be true of children in some smaller schools where a system of education is in practice which distinctly cultivates the powers of expression of the children, such, for example, as the system of the Parents' National Educational Union. To the children of such schools many of the tests of the scale are such as they are accustomed to practise in daily work, a condition which necessarily renders the tests valueless to them—a fact which is recognized by the author as a possible end-result of the common use of these tests in schools.

The last memorandum deals with the needs and uses of scholastic tests. For the measurement of school progress there is no scheme of tests, widely used and popularly recognized, claiming the same position and enjoying the same prestige as the Binet-Simon scale for the measurement of native intelligence. In collaboration with M. Vaney, Binet and Simon did attempt what they styled a "barometer of instruction"—a set of graded exercises in reading, spelling, and arithmetic, but the tests were compiled on a rougher plan, and in any case are not suitable for transplantation to other countries. Teachers are well fitted to make their own tests, but these are necessarily unrelated to the tests of other teachers. The difficulty is found especially in attempting to compare the scholastic attainments of children in widely different parts of a great city; what is only fair in one part may be considered excellent in another. There is no true comparison, and Mr. Burt has attempted to provide a series of graded tests, suitable for measuring as scientifically as possible the attainments of individual children in all the fundamental subjects of the elementary school curriculum. The scales are confessedly tentative, but are put before the inquiring teacher as a starting point for further research, and as an indication of lines of a principle likely to prove useful. Mr. Burt, indeed, recommends that every teacher should prepare his own tests after studying this test-sheet. The questions to be contained in the tests in actual use should be left to the investigators themselves, otherwise the tests may become stale and commonplace, and, like some of the Binet-Simon tests, so popularized as to be useless for their special ends.

These memorandums include a very valuable series of investigations which cannot fail to be of great value to educationalists and those engaged in school medical inspection. The London County Council is to be congratulated on their publication.

British Medical Journal.

SATURDAY, FEBRUARY 25TH, 1922.

THE MAUDSLEY HOSPITAL FOR MENTAL DISEASE.

SIR FREDERICK MOTT, Director of the Pathological Laboratory of the Maudsley Hospital of the London County Council, is retiring under the age rule, but the Council has arranged to retain his services until October next. He has held the appointment with great distinction since the hospital was erected, combining with its duties those of pathologist to the Council's asylums. The County Council is taking steps to appoint a medical superintendent to the hospital at a salary of £900 a year, with temporary additions on the Civil Service scale, and the right to engage in private practice as a consultant, subject to certain conditions, one of which will probably be that he shall reside in the neighbourhood of the hospital. So far as our information goes, no steps have yet been taken to decide on the staff which will be needed, but it is obvious that the objects with which the hospital was founded cannot be attained through the work of any single individual acting as medical superintendent.

We remember how in 1908, in a report on the arrangements made with Dr. Maudsley, the Chairman of the Asylums Committee spoke of the hope that the hospital would prove of great value in the dissemination of knowledge of mental disease, and in the provision of systematic instruction in methods of treatment. This hope has, indeed, partly been realized by the institution of courses for the diploma in psychological medicine. in the conduct of which Sir Frederick Mott has gathered about him some of the most distinguished exponents of the subject. The courses have been extremely well attended; but two things have somewhat militated against their complete success. The first is that, as there were no patients in the hospital, clinical instruction had to be given elsewhere; and the second, that the University of London has not shown the faintest interest in the matter. The chairman, in the report from which we have already quoted, referred to the advantages which would flow from the hospital being in close touch with the university, the general hospitals, and the medical schools. It was not, he truly said, to the advantage of the profession or the public that the study of insanity should to so great an extent remain an isolated branch of medical research. The belief was expressed that were this defect remedied, a closer acquaintance with the peculiarities of mental and nervous diseases would become more common, and many cases of incipient insanity which now find their way ultimately to the workhouse or to the asylum would by suitable treatment in the earlier and more hopeful stages recover without needing confinement in an institution. The need for a central pathological laboratory was also mentioned.

These are admirable sentiments, and a pathological laboratory exists, but the story of its dealings with the gift made to it some fourteen years ago by the late Dr. Henry Maudsley is not altogether creditable to the London County Council. There was, in the first place, an unexplained and most regrettable delay in finding a site and building the hospital. Its erection proceeded by slow degrees, and it was barely complete when early in the war it was taken over by the War Office for soldiers suffering from mental and nervous disorders. Though the hospital was given up by the military authorities some fifteen months ago, it is, we find, still unoccupied, yet the demand for the accommodation and treatment it could afford to civilian patients is pressing—so pressing, indeed, that we can hardly believe the suggestion, which nevertheless is being made, that it is being kept empty to save expense. No doubt sooner or later it will be taken into use, and the decision to appoint a medical superintendent is an indication of this intention.

But the purpose Dr. Henry Maudsley had in view was not to establish another asylum. His purpose was to set up an acute mental hospital which would serve as a model to other localities, and be a centre of investigation in both functional and organic diseases of the brain and spinal cord. To this end it is necessary to have a suitable hospital in a convenient locality, with a laboratory well equipped and of adequate size attached to it. These have now been provided. But for the intensive study of acute mental disorder, and for pathological routine work, to say nothing of research, a large staff is necessary. If we look abroad we find that the institute at Zurich has a medical staff of eleven—the Director, Professor Bleuler, two senior medical officers, five assistant medical officers, two voluntary physicians, and one pathologist. It has 400 beds; the number of admissions is about 750 annually. Of the beds, 250 are occupied by chronic patients, for whom two medical officers, in addition to the Director, would probably suffice. But it has 150 beds for acute cases, and these have a rapidly changing population; it is with them that the remaining officers are fully occupied—so fully, indeed, that in practice the pathologist has had to be taken away for clinical work, and in fact does no pathology. At Utrecht there is a mental hospital of about the same size under the direction of Professor Winkler, one of the most distinguished neurologists in Europe. He has a salary of £1,000 a year, a good house, and the right to private practice. Under him are a staff of five medical officers, and eight assistants in the laboratory. At the Psychiatric Clinic at Munich the Director, Professor Kraepelin, has working with him two senior physicians, four senior assistant physicians, four junior assistant physicians, five voluntary physicians, and three other officers recently qualified, whose duties are similar to those discharged by the clinical assistants working in the departments of general hospitals in England. The Munich clinic has 160 beds; the number of patients admitted annually is about 2,000. Again, at Cologne, Professor Aschaffenburg, the Director of the Psychiatric Clinic, has under him one senior physician, two assistant physicians, and a fluctuating number of voluntary physicians and newly qualified men.

The Maudsley Hospital, as we have said, possesses good laboratories, and it is in the direction of them that Sir Frederick Mott has been chiefly occupied. But we have shown how large a staff is considered necessary for the clinical study and treatment of acute mental cases. We still hope that the London County Council will rise to the height of its responsibilities, and organize the staff of the Maudsley Hospital on a liberal basis, both as to the number of the staff and their salaries. We are quite certain that its reward would be great, and that in the long run, even from the financial point of view, the ratepayers' pockets would be saved.

MILD SMALL-POX AND VACCINATION.

THE county medical officer of Lancashire (Dr. Butterworth) and his staff are to be congratulated on the very full, painstaking, and well-balanced report they have prepared on an outbreak of small-pox in Middleton in 1920. Indeed it is difficult to think of any aspect of the subject with which they have failed to deal, and that is important, because the epidemic was of so mild a type

that a less thorough investigation and record might well have been thought sufficient. The administrative measures adopted were of the usual character, including hospital isolation, disinfection, vaccination and re-vaccination, and surveillance of contacts and common lodging-houses.

The total number of cases was 83, and there was not a single death amongst either vaccinated or unvaccinated. Yet vaccination had abundant opportunity of demonstrating its value in protecting against attack. None of the 83 cases had been vaccinated or revaccinated within a period beginning seven years before and ending ten days before the onset of the disease. No child under 10 who had been vaccinated in infancy developed the disease, whereas 26 unvaccinated in this age period contracted it. Seven females were attacked between 20 and 40 years, but not a single male, and it is pointed out that this age period included ex-service men vaccinated during the war. Living in infected houses there were 175 persons who escaped the disease, and every one of them had been vaccinated either before or during the epidemic. The number of affected houses was forty-five, and a special investigation of vaccinal conditions was made in sixteen of these, containing 112 inmates, with the result that of 19 unvaccinated persons only one escaped attack; of 12 vaccinated over seven years ago, 6 escaped and 6 were attacked; of 8 vaccinated within seven years, all escaped; of 38 primarily vaccinated over seven years ago and revaccinated since contact, 37 escaped and one was attacked; of 34 primarily vaccinated subsequent to contact, 28 escaped and 6 were attacked; one person, protected both by primary vaccination and by small-pox in a previous epidemic, escaped. These figures go to demonstrate the value of vaccination even where there are no fatalities among the unvaccinated.

During the epidemic 4,410 vaccinations and revaccinations were performed, and if allowance be made for infant vaccinations by public vaccinators during the last seven years, and for vaccinations during war service, it is calculated that the total of recently vaccinated persons in Middleton at the end of the epidemic was approximately 33.9 per cent. of the population. Dr. Butterworth calls attention to the importance, in a vaccination campaign during small-pox, of securing the protection of contacts before dealing with others offering themselves for the operation, in order to prevent, as far as possible, dangerous delay in respect of contacts. Details are given of the precautions very successfully taken to prevent septic complications following vaccination and revaccination.

In discussing concurrent vaccinia and variola, attention is called to the mild type of the disease, and the interesting suggestion is made "that the quantity and quality of the small-pox virus initiating the infection influenced the question of the day up to which vaccination would be successful," and that "the cases in which vaccination failed probably had a more massive infection with the small-pox virus, or a less massive insertion of vaccine virus, than those in which the vaccination was successful." This proposition is very relevant to what has often been puzzling with regard to observed differences in the time which vaccination must have in order to overtake small-pox infection, so as to get home first in the race between variola and vaccinia. It need not cause surprise that vaccinia can sometimes be successfully cultivated locally in the earliest days of a variolous eruption. Cow small-pox and human small-pox are so nearly allied that they can grow together until one or other makes the subject immune to infection. As soon as that happens a further immediate attempt at vaccination will fail. This was so found in the Middleton epidemic.

A striking feature of the epidemic was the invasion of the largest school in Middleton. It began with a missed case in an unvaccinated child. Of the total number of cases in the borough 19 were in the school, and they were all notified within a period of nine days. All these were unvaccinated excepting two who had been vaccinated in infancy. One of the two was a teacher, aged 53, the other a child of 10. The vaccination history of 419 of the school children was investigated, and only 156 had been vaccinated in infancy. Of these 33 were revaccinated during the epidemic; 95 others were now vaccinated for the first time, whilst 168 remained unvaccinated. The school was closed for eleven weeks, largely because the attendance was much diminished, more than half being absentees who had to be kept under observation at home. The fact may be recalled that in the great Gloucester epidemic school children were a main cause of the spread of the disease throughout that city. A very important difference is, however, that the type of disease there was much more severe than in Middleton. Indeed, though various missed cases occurred in Middleton, we may assume that the total infective material must have been very small as compared with what would exist in a severe epidemic with abundant eruption. The risk from the missed cases may have been much more than counterbalanced by the low degree of infectivity of missed and recognized cases alike. In addition, there was the invaluable work of Dr. Butterworth and his assistants, several of whom were specially detailed for duty in Middleton, whilst the Ministry of Health, through Dr. Reece, gave valuable help during the epidemic. Such concentration of effort has become practicable only in recent times, and demonstrates the advantage of the county system of local government.

The report ends with a series of fifteen conclusions, of which the last is: "That the suppression of the epidemic was due to vaccination, revaccination, supervision of contacts, and the discovery of missed cases." There follows in an appendix a series of charts and diagrams, most of them devoted to the very useful purpose of showing the distribution of the rash both in small-pox and in chicken-pox. The origin of the outbreak is left in doubt. The hypothesis is fully discussed that it was due to infected cotton brought to local mills from America, where the type of small-pox is now commonly very mild, but Dr. Butterworth has cautiously reached the opinion that the theory is unproved for Middleton. In the end he adopts the somewhat trite conclusion, "that the most likely origin of the epidemic was a missed case." That is really another way of saying that the source could not be discovered.

It should be noted, finally, that the whole of Lancashire is indebted to its county medical officer for his masterly handling of the outbreak, occurring as it did in a town closely surrounded by great urban communities, such as Manchester, Rochdale, Heywood, Chadderton, Royton, Prestwich, extension to which might have involved a tremendously widespread epidemic.

THORACIC SURGERY AND SUBPHRENIC ABSCESS.

THE benefits which surgery derived from Henry V's campaign in France have been made very clear to us by the historical researches of Sir D'Arcy Power. In our own time the lessons learnt in battle surgery are bearing fruit in even more vital ways.

The timid and often only half-curative pre-war operations on the chest are giving place to bolder and better devised measures, which are justified by the brilliant progress made under stress of dire necessity during the war. Of all the books on battle surgery published during

the war, the great classic was Duval's book[1] on war wounds of the lung. Its influence is likely to spread far beyond the limits implied in its title. Dr. Ambrose Lockwood, writing from the Mayo clinic on "Developments and possibilities of thoracic surgery," provides a striking illustration of this influence. Although Macewen more than twenty years ago had shown that the thorax might be opened with as little ceremony as the abdomen itself, the generality of surgeons paid no heed to his teaching. The thorax remained a region to be approached with dread, and unhandy pressure chambers were deemed essential to the safe performance of thoracotomy. As Lockwood rightly says, "When it was realized" (as the result of the war and the influenza epidemic) "that the thorax could be opened and explored and the contents handled with as little risk as that attending the manipulation of the abdominal viscera, perfection of technique was all that remained to bring thoracic surgery to the standard it has attained to-day." Lockwood's contribution to this perfection of surgical technique under the most difficult forward-area conditions was one of the notable achievements of the war, although he would be the first to acknowledge the encouragement and practical help given him by his D.M.S. (Sir Menus O'Keeffe) and his commanding officer (Major R. J. C. Thompson).

On his return to the surgery of civil life Lockwood has applied his experience to good purpose in the operative treatment of thoracic conditions as met with in everyday practice. Empyema, lung abscess, bronchiectasis, foreign bodies, traumatic lesions, tumours of the thoracic wall, enlarged thymus, purulent pericarditis, subdiaphragmatic abscess, hernia of the diaphragm, and intrathoracic neoplasms are among the conditions to which improved surgical technique will bring prospects of sounder cure or greater alleviation. He suggests that splenectomy and operations on the cardiac end of the stomach may be performed more easily through a combined abdomino-thoracic incision. In his recent paper Lockwood does not devote much space to the problems of diagnosis, except that he insists on the immense value of *x*-ray examinations. The day is probably not far distant when a physical examination of the chest made without *x* rays will be regarded as no more complete than if auscultation itself had been omitted. Lockwood is an ardent advocate of local and paravertebral anaesthesia rather than a general anaesthetic for thoracic surgery, and his preference is right well founded. His description of the technique of the actual operation for thoracotomy is lucid and admirable. His remarks on the necessity for hermetically closing the chest at the end of the operation, for repeated aspiration afterwards, and his observations on the expansion of the lung deserve the closest attention.

In another paper[2] Lockwood discusses subdiaphragmatic abscess in all its bearings. The description of the anatomy of the under surface of the diaphragm is clear and complete, and follows in the main Barnard's anatomical account published in 1908. The etiology, symptoms, course, and complications are excellently set forth. The important part played by the lymphatics in determining the localization of subphrenic suppuration is emphasized; so, too, is the indispensability of *x*-ray examination in diagnosis. The extreme variations in the leucocyte count show that too much reliance must not be placed on leucocytosis as a diagnostic aid. The operation advocated is devised particularly for abscesses located on the right side. Rib resection is avoided. When the incision has been made the edges of the skin are undermined, the parietal pleura, with the diaphragm adherent to it, is separated from the rib above the incision and from the rib below, and, after forcing the interspace widely enough open to admit the hand, the cut edge of the muscle with the pleura is sutured to the diaphragm. The diaphragm is brought out as far as possible through the interspace and the edges of the skin are sutured to the diaphragm so as to shut off completely the intermuscular and fascial planes. Whenever possible the patient is sent back to bed for twenty-four to thirty-six hours and the diaphragm incised at a second operation. If a two-stage operation is inadvisable the diaphragm can, as a rule, safely be opened after smearing the suture line with vaseline. The after-treatment is of no less importance. A two-way drain is left in the abscess cavity and 1 oz. of saline is passed through the tube three times a day to clear it for drainage. On the sixth or eighth day the drain and packing are removed. The cavity is swabbed out with saline and inspected with a lighted retractor, and the wound is packed with glycerin and saline. A two-way catheter is left in position for drainage until the cavity is closed. The advantages of this method are summarized in series of thoughtful conclusions.

There is no doubt that thoracic and abdomino-thoracic surgery are on the threshold of advances long overdue. A clear indication of this was given by Professor G. E. Gask in his admirable Lettsomian Lectures before the Medical Society of London last year. No longer will textbooks be justified in summing up the surgical treatment of empyema as consisting in the evacuation of the pus and the provision of free drainage. Estlander's mutilating operation will, it is to be hoped, be abandoned. Surgeons embarking on the newer methods must bear in mind, however, that modern thoracic surgery demands uncommonly thorough mastery of technique and well-nigh fanatical asepsis.

[1] Duval: *War Wounds of the Lung.* Wright, 1918.
[2] *Surgery, Gynecology, and Obstetrics*, 1921, p. 502.

THE PENSIONS ORTHOPAEDIC HOSPITAL, SHEPHERD'S BUSH.

In February, 1916, thanks chiefly to the prescience and energy of Sir Robert Jones, the War Office opened the Military Orthopaedic Hospital at Shepherd's Bush in the buildings of the Hammersmith Infirmary. To these buildings a number of others were added, until this institution became a model of what such a hospital should be, containing within itself every ancillary department that is necessary for the treatment of the deformities and disabilities consequent upon war injuries. The work was continued, and still goes on with unabated vigour and success under the Ministry of Pensions, and it must be many years before this and the similar institutions in the provinces cease to find occupation. When it is proposed—as paragraphs and letters in the daily press and questions in Parliament have disclosed to us—that such an institution should be removed to a distant site it might naturally be supposed that the only valid reason for such a proposal must be that the treatment of disabled pensioners would thereby be improved. But the letter of Mr. McCrae Aitken, which we print on another page, shows with convincing clearness that the proposed change is not likely to produce any such result, but that, on the contrary, the removal and separation of the in-patient and the out-patient departments must inevitably lead to delay, discomfort, and hardship for the patients, and, by impairing the efficiency of treatment, result in decreasing the proportion of pensioners who will be restored to conditions which will enable them once more to earn their daily bread. It must, we think, come as a painful surprise to our readers that the reason alleged for the removal is not that the patients will benefit, but that a problematical saving of a few thousands a year is expected to be made by the changes. Were there even a reasonable probability of this saving, it should count as nothing in the balance against the preponderant interest of the men injured in the defence of their country and of the sacred cause of freedom. We think, however,

that it is more than doubtful if any saving would accrue to the country as a whole; for the resumption of the infirmary by the guardians must involve considerable capital expenditure besides a great increase in the cost of maintenance of the sick poor who are now efficiently provided for elsewhere, while large sums would have to be expended by the Ministry of Pensions to render the Richmond hut hospital and the out-patient clinic efficient. The visiting staff of the hospital consists of surgeons, some of whom had great knowledge of orthopaedic work before the war, and all of whom have now acquired unequalled experience in the treatment of the difficult problems presented by the injuries and mutilations of modern warfare. They are now fully occupied during the time allotted to their visits, which amount to many hours a week. Yet it is clear that if they are to do part of their work some six miles further from London in order to treat in-patients, besides paying visits to an out-patient centre or centres, they must spend so much time in travelling that they will have less to devote to their actual work. Continuity of treatment is essential in these cases, and it is of the first importance that the surgeon who operates upon the case and treats him as an in-patient should continue to treat him as an out-patient. Therefore it will be necessary for the same surgeons to visit both the out-patient centres and the wards. Leaving aside for the moment the all-important question whether treatment can be as efficient as under present conditions—we have no hesitation in asserting that it cannot—on the lower ground of finance alone it is clear that the prolongation of the time of treatment which must inevitably result from such an arrangement will entail in the case of each man an increased expenditure in maintenance and in treatment allowances which is almost sure to swallow up any possible saving which might be made by this deplorable proposal which cannot fail to diminish the efficiency of the treatment of men who have earned the right to the best. The medical profession will be unanimous in condemning the proposed changes, which might probably be avoided if negotiations were reopened in a conciliatory spirit on both sides, so that a fair rental could be agreed upon.

SPIRITUAL HEALING.

On January 14th (p. 72) we called attention to a resolution of the Lambeth Conference in 1920 requesting the Archbishop of Canterbury to appoint a committee "to consider and report as early as possible upon the use with prayer of the laying-on of hands, of the unction of the sick, and other spiritual means of healing." At the meeting of the Upper House of Convocation on February 15th the Archbishop of Canterbury announced that after consultation he had appointed the following to serve on the committee: The Bishop of Oxford (chairman), Sir Clifford Allbutt, the Rev. Harold Anson, the Rev. E. J. Bicknell, Dr. William Brown, the Bishop of St. Albans, Bishop Chandler, the Bishop of St. Edmundsbury, the Bishop of Southwark, the Dean of Wells, Dr. J. A. Hadfield, Sir R. Armstrong-Jones, Canon A. J. Mason, the Rev. J. O. F. Murray, Master of Selwyn College, Mr. W. H. B. Rivers, F.R.S., Canon Streeter, the Rev. W. B. Trevelyan, and Dr. Jane Walker. Among the questions submitted to the committee were the following: Are we justified in assuming that there has been "the ministry of healing" in the Church? If so, what was its precise character? What qualifications and tests were required to become a minister of healing? Did it supplement or disregard the service of the physician—that is to say, were gifts of healing distinct and independent of the gifts of healing by medicine and surgery? If, without a technical ministry, there has been the habitual practice of laying-on of hands with prayer, with or without unction, has this been a method of healing different in kind from other methods of treatment? Even if there has been no ministry of healing, is the Church called upon, in the light of modern research and discovery, to direct the knowledge gained and to use it in her ministrations? It will be seen that much of the work proposed to the committee is of the nature of historical research. Therein its object differs from the task upon which Bishop Ryle's Committee on Spiritual Healing was engaged before the war. That committee, dealing with modern methods of spiritual healing, expressed the belief that "Divine power is exercised in conformity with, and through the operation of, natural laws." It considered that "spiritual ministration should be recognized equally with medical ministration as carrying God's blessing to the sick." But the committee was of opinion that the "physical results of what is called faith, or spiritual healing, do not prove on investigation to be different from those of mental healing, or healing by suggestion." The conclusion was that spiritual healing, like all treatment by suggestion, can be expected to be permanently effective only in cases of what are generally termed "functional" disorders; but that persons suffering from organic disease can be greatly comforted and relieved, and even physically benefited, by spiritual ministrations, which appeal to the spiritual nature, reinforce the spiritual powers, and may thus contribute to the success of physical treatment by the medical practitioner. The report of Bishop Ryle's Committee ended by deprecating strongly the independent treatment of disease by irresponsible and unqualified persons. It may be doubted whether the new committee will be able to go much beyond those very sane and reasonable findings—a distinguished authority has called them platitudinous.

THE INDUSTRIAL FATIGUE RESEARCH BOARD.

In the second annual report of the Industrial Fatigue Research Board, which has just been issued, we find a comprehensive summary of the chief results obtained by the Board since its inception some three years ago. These results have been published in a series of sixteen reports, which really represent the output of the Board's investigators over a period of about two years, for there is necessarily a considerable delay before the results of the inquiries reach the stage when they are ready for publication. If any critic had doubts as to the value of the Board's work, and the importance of its further development on the lines laid down in this report, we think that such doubts would speedily be laid to rest by an impartial study of its pages. They contain a solid body of information which is of direct value to employers of labour, and to welfare workers and factory inspectors; the practical application of this information to the remedy of adverse industrial conditions would produce a very real improvement in the health and efficiency of the workers. In the analysis of published work with which the report opens the various tests of efficiency and fatigue employed are briefly described, and then a more detailed account is given of the results obtained in various industries concerning output in relation to hours of labour and the duration of work spells and rest pauses. A subsequent section of the report deals with the impersonal physical conditions of the worker's environment, such as temperature, humidity, ventilation, and lighting, and the effects of these conditions on efficiency. Personal factors, such as vocational selection and guidance, time and motion study, and the effects of such conditions as seating and clothing, are treated in considerable detail, whilst a shorter section deals with such matters as organization and the relative importance of human and mechanical factors in efficiency. Most of the sections are illustrated by diagrams reproduced from the published reports of the Board, and they show at a glance the hourly and daily variations of output observed under various conditions, the effect of regular rest pauses on output, the improvement of output caused by more adequate lighting and by better ventilation, and the value of certain psycho-physiological tests in measuring the skill of compositors. The future of the Board seems full of promise, for, in addition to the investigations already made in certain branches of the textile, iron and steel, and boot and shoe industries, others are now in progress in the laundry and the pottery industries, whilst application has been made to the Board by various trade boards and research associations for the institution of inquiries into several other important industries.

CARBON MONOXIDE IN LIGHTING GAS.

LAST autumn we found it necessary to comment very unfavourably on the report (which had just been issued) of a Departmental Committee on the dangers from carbon monoxide in lighting gas. We pointed out that this committee had greatly underestimated the risks involved in increasing the percentage of carbon monoxide in lighting gas, and that the report was likely to mislead the gas industry very seriously. The facts on which our criticisms were based will be found set out in our articles published on September 10th (p. 411) and October 1st (p. 534), 1921. During the present winter cases of poisoning by lighting gas have been frequent, and the need for safeguards against the increasing risks of poisoning by carbon monoxide has recently been pointed out in articles and correspondence in the newspapers. As a consequence, doubtless, of this increasing frequency of poisoning by lighting gas, the Board of Trade has now issued an order that no lighting gas shall be distributed unless it has a pungent smell. We must point out, however, that the gas distributed in public supplies has and always has had a pungent smell. The order has thus no bearing whatever on the existing dangers. The frequency of poisoning by lighting gas has begun to exceed the limit of what public opinion will tolerate, and no further comment is now needed on the report of the Departmental Committee. As we have pointed out, the great increase in frequency is due to the increased percentage of carbon monoxide in the gas. It may be possible, by various precautions, to avoid these risks; but on the nature of these precautions the report of the late committee threw no light. It is unfortunate that leading representatives of the gas companies are now screening themselves behind the report instead of taking action to diminish the danger to the public. The situation can hardly remain as it is, and requires careful consideration by medical officers of health throughout the kingdom. It appears that in view of the terms of the late committee's report no Government department has now any power of interfering with the discretion of gas companies as regards the proportion of carbon monoxide in the gas they supply. On the other hand, we are confident that gas companies are particularly anxious to avoid exposing the public to avoidable risks of poisoning, and will be ready to take suitable action in response to well-considered representations from medical officers of health. If, however, the matter is not dealt with satisfactorily in this or some other way, there must be no hesitation in calling for legislation limiting the percentage of carbon monoxide in public supplies of lighting gas. The mistakes of a departmental committee cannot be allowed to stand in the way of public safety.

RADIOLOGY AND PHYSICS.

THE third Mackenzie Davidson memorial lecture was delivered at the Royal Society of Medicine on February 17th, when Major G. W. C. Kaye, D.Sc., was the lecturer, and described the ever-growing importance of physics to the radiologist. The appreciation of the physicist by the medical worker in this country, he said, was a plant of tender years. The average medical student, with an eye on the forthcoming examination, was prone to dislike and distrust physics. It was not sufficiently brought home to the student that a knowledge of physics, so far from trammelling him, would liberate him from many false notions. Major Kaye devoted most of his lecture to the physics of the *x* ray. Not everybody knew that *x* rays played a material part in nature. The sun was an *x*-ray bulb, but such *x* rays as escaped towards the earth were almost wholly arrested by the upper layers of the atmosphere, which accounted for the fact that the natural ionization of the air increased with altitude. No doubt *x* rays played a part in atmospheric electricity, and they might be held responsible for some of the vagaries encountered in wireless telegraphy. Until recently a gap of four octaves existed between the shortest ultra-violet ray known to spectroscopic science and the longest *x* ray, but within the last few weeks, as the result of experiments by indirect photo-electric methods on the part of a number of workers, both in England and America, it had been discovered that the continuity was complete, and that the *x* rays immediately followed the ultra-violet, or even overlapped into the ultra-violet region. The ultra-violet extended from 3,600 to 200 Angström units, the *x* rays from 500 to 0.06 units, and the gamma rays of radium from 1.4 further into the infinitesimal. The wave-length of the gamma rays was something like one 10,000 millionth part of a centimetre, and at the other extremity of the scale were the Hertzian waves with a length of several miles. There were sixteen octaves of *x* rays, and as yet the radiologist had turned only three of them to account. The output of *x* rays from a tube was proportional to the atomic weight of the metal used as target, to the current passing through the tube, and to the exciting voltage, which last was by far the most important thing for the radiologist to measure. Many new problems of interest awaited radiology when still higher voltages were made possible. Recently there had come news from America that Dr. Coolidge had succeeded in building a transformer which was capable of yielding a million volts. The problem of designing *x*-ray apparatus to "stand up" to such voltages was not a light one. In conclusion the lecturer dealt with the subject of *x*-ray protection and the labours of the Protection Committee recently established as a result of the conjoint effort of interested societies. It had been his lot to inspect the conditions obtaining in the radiological departments at a number of hospitals, and he found matters very unsatisfactory. The protection for the operator was lamentable in its inadequacy. He had taken with him a delicate electroscope, with the object of exploring the scattered radiation in different parts of the *x*-ray room, and had found that this radiation was far beyond the capacity of the instrument to register. The investigators had to content themselves with the relative ease with which they could see the bones of the hand on a fluorescent screen carried about the room! Ventilation was of importance second only to the actual limitation of the issuing beam; yet many hospitals appeared to regard the radiologist as akin to the mole or earthworm, and packed him away in the basement, not far from the furnaces. The high-tension system also was not as it should be, and sometimes the coronal brush discharge on the wires resembled a benefit night at the Crystal Palace. Generous recognition should be given to the action of *x*-ray apparatus manufacturers for their assistance in the matter of protection. It was a very wise precaution to secure a certificate from the National Physical Laboratory as to the efficiency of the lead-glass and lead-rubber used for protection, because the protective value of these materials varied within very wide limits.

THE TEETH OF THE NATION.

PROFESSOR W. D. HALLIBURTON, F.R.S., who is chairman of the Committee on the Causes of Dental Decay appointed by the Medical Research Council, gave a lecture at the Royal Institution on the evening of Friday, February 10th, on the teeth of the nation. A number of sculls on the lecture table suggested the antiquity of dental mischief, though they included a rarity in the shape of a modern adult skull with perfect teeth. From the mouth of Jaques we had learned that the last scene of all which ends man's strange, eventful history was marked by toothlessness; and a much earlier oracle, the writer of the book of Ecclesiastes, spoke of old age as a time when "the grinders cease because they are few." The idea, based on some neolithic skulls with perfect dentition, that remotest man was free from this common ill, had been upset by the discovery of the Rhodesian skull, which exhibited a typical form of dental caries. The fossil mastodon also was said to show evidences of this trouble, but on this point the lecturer was sceptical. He reminded his audience that the teeth were a living portion of the body, and were affected by constitutional influences far below the surface, and in their turn, when unhealthy, were the source of many evils, affecting not only the alimentary canal, but leading to septicaemia and

rheumatoid affections. He also pointed out that the foundation even of the second and permanent set was laid in intra-uterine life, so that the dental question was in its beginning a question of pre-natal and infant care. The consumption of overmuch sugar was to be avoided because it was converted into lactic acid, which was destructive of the protecting enamel. It might be urged against this prohibition that the workers in cane-sugar plantations, whose mouths were full of sugar from morning to night, suffered comparatively little from dental troubles; but cane sugar excited a flow of saliva which washed away the offending material, and this did not apply to the same extent to glucose and the sugars commonly used in sweets. He uttered a special warning against allowing children to go to bed with sweets in their mouths, for in the night, when the flow of saliva was diminished, this sticky paste had its opportunity to foster dental decay. Professor Halliburton gave a vivid popular description of the formation of the teeth, likening the process to the operations in building, especially sculpturing and plastering, and showed some photomicrographs by Mr. Howard Mummery to demonstrate a matter which dentists had been slow to recognize, that the nerve fibres penetrated into the dentinal tubules. It was natural for the human mind to associate strength with solidity, but nature might have shown us quite early that there was a superior form of building to that exemplified in the castle wall—namely, slender lattice work, which might prove as resistant as solid masonry, and was much more economical. It was on that principle that bone and teeth were built, and also, on a larger scale, what might be called the teeth of the earth, in the shape of the cliffs jutting into the sea. The analogy between the two might be carried further still, for the basaltic columns found on the Island of Staffa, at the Giant's Causeway and elsewhere, were as a rule hexagonal, and so, when examined under the microscope, were the prisms of the enamel or adamant which fitted into corresponding depressions on the surface of the dentine. One of the skulls exhibited by the lecturer, from the collection at the Royal College of Surgeons, was that of some unknown soldier, found in France, and he pointed out the narrowness of palate and depth of arch. About one modern skull in four exhibited this curious down-growth of the alveolar process, which accounted for the long narrow face so frequently seen among intellectual men.

A DIPLOMA IN TUBERCULOSIS.

PROPOSALS to set up a diploma in tuberculosis, to serve as some evidence of the competency of candidates for the post of tuberculosis officer, have been considered by several universities and licensing bodies, but hitherto all have hesitated, mainly because the policy of establishing a diploma in any particular disease was felt to be of doubtful wisdom. The University of Wales has now taken the plunge, and we publish elsewhere a letter from Professor S. Lyle Cummins, explaining the reasons which have moved that university to set up a Tuberculous Diseases Diploma. The first is that the number of appointments for whole-time tuberculosis work is already large and is likely to increase; the second is that the diploma would provide young medical men with evidence that the holder had devoted a period to the study of the disease; the third is the importance of encouraging the study of the disease as a whole, including its surgical manifestations; and the fourth is the belief that preventive measures are likely to be based on sounder lines if greater account is taken of tuberculosis as a general rather than a local disease. The curriculum and examinations, details of which are given at p. 333, will suffice to afford adequate evidence of the holder's technical competence, and the Welsh National School at Cardiff has arranged a special course of instruction, both theoretical and practical. The contracted title of the diploma is to be T.D.D., and there were, no doubt, sufficient reasons for avoiding the shorter form, D.T., while there is not much fear that the holders will be supposed to be a new kind of Doctors of Divinity. The multiplication of diplomas in special subjects during recent years has been remarkable. Oxford gives a diploma in ophthalmology, other universities give diplomas in tropical medicine and hygiene, in psychological medicine, in medical radiology and electricity, and Manchester grants special certificates in factory medicine and in school hygiene. The number of letters which a medical man may now be able to put after his name has become very large, and we suggest discretion in their employment. To put oneself down as M.D., M.R.C.S., L.R.C.P., L.M.S.S.A., D.O., D.T.M. and H., D.P.M., D.M.R. and E., and T.D.D. would be a trifle absurd; and then there is the D.P.H., which, however, may be entered on the *Medical Register*.

AN HONOUR TO MEDICAL OFFICERS OF HEALTH.

THE President and Council of the Society of Medical Officers of Health were entertained by the Lord Mayor of London to luncheon at the Guildhall on February 17th. The principal guest was Sir Alfred Mond, who, in proposing the toast of the Society, said that as Minister of Health he was somewhat in the position of a godfather to the medical officers of health in the country, and watched their proceedings with the greatest sympathy. It was of the highest importance that the best men should be attached to the public health service, and local authorities could not expect to get first-class service at third-class salaries. This was a time of great anxiety to one holding his position, but he did not intend that the work should fall back. Though there was an extraordinary strain on the financial resources of the country at the moment, and everyone was anxious to co-operate in effecting economies, nothing must be done in that direction which would prevent the country from securing satisfactory results. Even in these days of retrenchment it would be false economy to employ a man who was not up to his job, in order to save a small outlay on his salary. Dr. Howarth, M.O.H. for the City of London, in responding, said that the forward policy of the City of London had done much to bring the public health service up to its present state of efficiency, which was so high that this country was everywhere looked up to in matters concerning the prevention of disease. A vote of thanks to the Lord Mayor, proposed by Lieut.-Colonel Fremantle, M.P., was suitably acknowledged.

COMMITTEE ON BIOLOGICAL ACTIONS OF LIGHT.

THE Medical Research Council has appointed a Committee to advise it upon the promotion of researches into the biological actions of light, with a view to obtaining better knowledge of the actions of sunlight and other forms of light upon the human body in health or disease. The Chairman of the Committee is Professor W. M. Bayliss, F.R.S., and the other members are Mr. J. E. Barnard, Dr. H. H. Dale, F.R.S., Captain S. R. Douglas (late I.M.S.), Sir Henry Gauvain, M.D., Dr. Leonard Hill, F.R.S., and Dr. J. H. Sequeira. The Secretary is Mr. Edgar Schuster, D.Sc.

HOSPITALS AND PAYING PATIENTS.

THE report of the Council to the Representative Meeting on the organization of voluntary hospitals, particularly as affected by the reception of patients for whom payment is made, will be found in the SUPPLEMENT for this week. It will eventually form part of the Annual Report of Council, but is printed thus early in order that it may be fully considered by the Divisions in time to allow any amendments they desire to be considered by the Council, which will deal with them in a further report. The Secretaries of Divisions have been asked to call special meetings to consider this report, which in its final form will be discussed at the Annual Representative Meeting at Glasgow next July. If then adopted it will become the policy of the Association on this matter. The report was drafted by the Hospitals Committee, and was considered at length by the Council at its meeting on February 15th. A report of other proceedings of the Council on this occasion will also be found in this week's SUPPLEMENT (p. 49).

AN INSTITUTE OF HYGIENE IN LONDON.

IT has been known for some time that the Rockefeller Foundation has been seriously considering the recommendation for the establishment of an Institute of Hygiene, contained in the Report of the Post-Graduate Medical Committee published last May (the Athlone Committee). The recommendation was that an Institute of State Medicine should be established in London with well equipped laboratories and an efficient staff. It was further recommended that the Institute should also provide instruction in other directions, including courses in forensic medicine, toxicology, and industrial medicine.

These recommendations were considered by an expert committee, with the Minister of Health as chairman. In view of the difficulty at present of financing the scheme, the whole case was put before the Rockefeller Foundation as one in which they might think it well to co-operate in the general interest of progress in public health here and abroad.

The Minister of Health has announced that the Rockefeller Foundation have offered to provide a sum of two million dollars towards the cost of building and equipping an Institute or School of Hygiene in London, on the understanding that the British Government accept the responsibility of providing for the staffing and maintenance of the school when it is established. This generous offer has been accepted by the Minister of Health on behalf of the Government.

Hygiene, like other departments of medicine, knows no boundaries. In that sense this fine gift is made for the benefit of international medicine, but this country is grateful to the Rockefeller Foundation that it should have been selected. The Athlone Committee estimated that the cost of maintaining an Institute of State Medicine would be about £10,000 a year. The scale on which the Rockefeller gift will make it possible to establish the Institute of Hygiene (it amounts at the present rate of exchange to over £400,000) will call for a larger expenditure for staff and maintenance; we have heard it estimated at £25,000 a year. Those familiar with the Athlone report will remember that it proposed to associate the Institute with the University of London. This recommendation, it would appear, is not to be carried out, and the annual expenditure will therefore not come out of moneys at the disposal of the University Grants Committee, but will be found by a special vote of Parliament. The intention is, we believe, that the Institute of Hygiene shall be administered by a mixed committee, representing the various bodies interested, for it is to be remembered that London already possesses certain important elements of an institute of hygiene.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

The Orthopaedic Hospital at Shepherd's Bush.

MAJOR TRYON informed Mr. A. Herbert, on February 15th, that it was proposed to give up the hospital at Shepherd's Bush, which had been specially equipped for orthopaedic surgical treatment at a cost of £16,000 by the Red Cross Society. The equipment would be moved from the present institution and installed elsewhere for the continued treatment of pensioners. On another question by Sir M. Wilson, Mr. Macpherson said that the transfer was to be to the South African Hutment Hospital at Richmond. He had received urgent representations from the guardians of Hammersmith that the administration of parochial relief was seriously hampered by the continued use by the Pensions Ministry of this institution, which was formerly the workhouse and infirmary of the parish, and they were willing only to assent to extended tenancy in return for a greatly increased rental, which would not have been justified. The opportunity presented itself of acquiring equally suitable premises at the Richmond Hill Hospital from the Army Council, free of rent, and he had taken it up.

Lieut.-Colonel Spender-Clay, on February 16th, asked what breaks in the continuity of treatment, both for in- and out-patients, the removal would involve, and if the consulting orthopaedic surgeon had agreed that the patients would not suffer. Mr. Macpherson replied that the transfer was entirely dictated by the need for public economy. The rent demanded for the building at Shepherd's Bush was £14,000, without security of tenure. The question of removal, therefore, did not resolve itself purely into a medical one. The medical staff would naturally prefer to remain in a building associated with so unique a standard of surgical efficiency. But he had no doubt that the change would not be detrimental to the interests of the patients. It was not possible to state the exact number of patients that would have to be transferred when the removal took place at the end of next month. He understood that the estimate of the cost of removal and adaptation would not be likely to exceed one half-year's rent that would have to be paid at Shepherd's Bush. There was no lease of the Richmond Park Hospital, but the First Commissioner of Works had agreed to its retention for at least two years, rent free. The matter of assisting out-patients who live near the Shepherd's Bush hospital was being considered.

Malaria in Ex-Service Men.—Major Tryon stated, in answer to Mr. Frederick Roberts, on February 14th, that the Minister of Pensions was aware that, in dealing with claims to pension for malaria, difficulty sometimes arose in establishing the existence of the disease owing to the fact that it was active at long intervals only and for very short periods. He was, however, considering what better arrangements, consistent with his powers under the pensions warrants, could be made to meet this difficulty.

Milk Impurities.—In reply to Mr. Doyle, on February 15th, the Minister of Health said that he had for some time, in consultation with leading experts, been considering what steps should be taken to improve the milk supply, but he could not yet say whether it would be possible to introduce legislation this session.

The Asylums Inquiry.—Captain Loseby and Mr. Mills addressed, on February 15th, further questions to Sir A. Mond in regard to the departmental inquiry into lunatic asylum administration. The Minister repeated that in his opinion the tribunal appointed to investigate the allegations made by Dr. Lomax was quite impartial, and that it was now for the latter to substantiate his charges or to withdraw them. In reference to the refusal of the Asylum Workers' Union to be represented at the inquiry, Sir A. Mond said that his information was that they refused because they wanted to have a representative on the Committee. Considering that they were the people who were mainly attacked by Dr. Lomax, it obviously would not be proper to put them on the Committee.

Food and Milk for Mothers and Children.—Asked, on February 15th, by Lieut.-Colonel Pownall what would be the policy of the Ministry of Health during the next financial year in regard to the supply of food and milk to expectant and nursing mothers and young children, Sir A. Mond said that the circular he issued last December was designed to reduce an expenditure which had been found to be excessive. The circular also embodied medical advice as to the value of supplying meals instead of milk, which information he had received from his medical advisers and from outside persons of great authority. He had now received replies from most of the local authorities, and these were generally to the effect that they preferred to continue the supply of milk, in view of the difficulty of arranging for the general supply of meals. He therefore proposed to continue during the next financial year the arrangements at present in force for the supply of milk under proper safeguards against abuse, allowing local authorities to substitute meat for milk where they desired and were able to do so.

Diphtheria in London.—Sir A. Mond, on February 15th, accepted a statement by Mr. Gilbert that the increase in the number of cases of diphtheria in London recently was abnormal. He regretted that it was impossible, in answer to a parliamentary question, to deal in detail with the preventive measures taken by the Ministry and the local authorities concerned, but he had reason to believe that they were satisfactory, and that a very large percentage of the total number of cases of diphtheria had been removed for isolation and treatment to the hospitals of the Metropolitan Asylums Board.

Mental Deficiency.—Mr. Leslie Scott asked, on February 16th, whether the Minister of Health had been able, in consultation with the Board of Control and the Treasury, to reconsider the position created by the circular of the Board of Control of August last in relation to the financial limitation of local authorities in dealing with urgent cases of mental deficiency. He asked whether the circular would not be withdrawn, as its operation would prevent large numbers of cases being dealt with under the Act, with results to the rates and taxes that would be far more expensive. Sir A. Mond said that in view of the economy which it should be possible to secure on the mental deficiency service generally, he hoped that local authorities could now make such provision as was essential to enable new urgent cases to be dealt with, and he was causing the Board of Control to issue a circular accordingly.

Orderlies in Pensions Hospitals.—Mr. Locker Lampson recently asked a question arising out of the Geddes report; he wished to know how many orderlies were employed in Ministry hospitals, and whether there was one orderly for every six patients. Mr. Macpherson said there were 1,879 orderlies employed in Ministry hospitals and convalescent centres, and there were 13,644 in-patients, but less than 50 per cent. of the orderlies were employed on nursing duties or in the wards. The remainder of the orderlies so termed were merely employees engaged on general domestic duties—for example, as messengers, sanitary men, store-men, gate-men, dining-room orderlies, gardeners, and ambulance drivers and in the out-patient department, where 17,861 patients were being treated. In reply to another question, Mr. Macpherson said he was considering the issue of a memorandum on the Geddes report.

End of the Rabies Outbreak.—Sir A. Boscawen, in answer to Sir John Butcher, on February 20th, stated that all remaining muzzling and movement restrictions imposed on account of rabies (namely, those in force in Hampshire and Wiltshire) were removed on February 6th, no case of rabies having occurred in those areas nor in any other part of Great Britain for eight months. The Ministry of Agriculture had now every reason to believe that rabies had been entirely eradicated after a visitation of three and a half years.

England and Wales.

THE WELSH COMMITTEE AND THE WELSH NATIONAL SCHOOL OF MEDICINE.

THE Welsh Committee of the British Medical Association, which met at Shrewsbury under the presidency of Dr. W. B. C. Treasure, J.P., of Cardiff, was attended by Mr. Gwilym Hughes, the Organizing Secretary of the Welsh National School of Medicine appeal for £100,000 for further endowment and equipment. During the proceedings the Chairman read letters from Lord Kenyon, the Pro-Chancellor of the University of Wales, asking for the influence of the Welsh Committee in pressing upon the medical profession in Wales the claims of the Medical School, and also from Professor Ewen J. Maclean, J.P., suggesting that the Divisions of the Association might, at the instance of the Welsh Committee, be asked to circularize their members asking for individual contributions to the fund, and for the influence of the members of the Association in making known to the people of Wales the requirements of the National School. In reply to Dr. Alfred Cox, the Medical Secretary of the British Medical Association, and other members, Mr. Gwilym Hughes gave further information as to the progress of the appeal. The Welsh Committee unanimously resolved:

> That this Committee warmly approves of the appeal of the Welsh National School of Medicine, and is of the opinion that it deserves the cordial support of the medical profession in Wales, and that the letters of Lord Kenyon and Professor Ewen J. Maclean be sent to the Divisions and Branches in Wales, with a suggestion that the Division or Branch, or both, should accept the offer of Lord Kenyon to invite the committee of the appeal to send a representative to address a meeting of the profession.

THE UNIVERSITY COLLEGE OF SOUTH WALES AND MONMOUTHSHIRE.

At the last meeting of the Court of Governors of the University College of South Wales and Monmouthshire a resolution was adopted pointing out that any diminution in the Government grants would seriously impair the efficiency of the College. Reference was made to the proposal to reduce the Government grant made to the universities through the University Grants Committee, and to the suggested withdrawal or suspension of the Government promise to contribute (on the £ for £ basis) the equivalent of all new contributions towards aproved university purposes. The proposal would affect both appeals—that of the National School of Medicine and the College generally.

At the same meeting the draft supplemental charter was approved. During the discussion it was pointed out that the relation of the School of Medicine to the College might be defined by stating that the school was a unit within a unit; the Faculty of Medicine had, in effect, become almost a senate, but the College Council retained financial control. An amendment was proposed providing that the departments of anatomy and physiology, now under the direction of the College Senate, should be added to the list of departments coming under the jurisdiction of the Faculty of Medicine. The amendment was resisted by the Principal and others, and was finally rejected. The statutes were then adopted.

INFLUENZA IN BIRMINGHAM.

Influenza assumed epidemic proportions in Birmingham during the early part of January. There are distinct signs, however, that the wave has reached its maximum height and is now falling. For the most part the disease has been of the benign type, affecting all ages, especially young adults and the middle-aged, the schools having suffered little. Intense headache and distressing cough have been amongst the most prominent symptoms, the latter being very persistent. Grave pulmonary complications and fatalities have not been so numerous as in some previous epidemics.

By courtesy of the medical officer of health, Dr. John Robertson, we are able to publish the following information. During normal winter months there are from 0 to 6 deaths every week, with influenza as a cause; 40 to 60 deaths weekly from respiratory diseases; and from 15 to 30 notified cases of influenzal or acute pneumonia. The recent figures are as follows:

	Respiratory Disease Deaths.	Influenza Deaths.	Pneumonia Notifications
Week ending—			
December 31st, 1921 ...	42	4	18
January 7th, 1922	48	8	28
January 14th ,, ...	70	25	41
January 21st ,, ...	86	43	119
January 28th ,, ...	91	54	167
February 4th ,, ...	84	46	142

The comparative figures of deaths from influenza are: in 1918, twenty-two per 1,000; in 1919, nine per 1,000; and in 1922, three per 1,000. It will be seen that the epidemic, although very widespread and attacking large numbers, has not been responsible for many deaths.

CONTRIBUTIONS TO HOSPITALS BY EMPLOYERS.

At the annual general meeting of the Midland Railway Company at Derby, on February 16th, Mr. Charles Booth, chairman of the company, referred to the financial position of the hospitals, which he said was so critical as to threaten the breakdown of the whole voluntary system throughout the country and to throw the hospitals upon the already overburdened taxpayer and ratepayer, with the consequent blighting influence of Government control. The Midland Railway Company had always subscribed to hospitals in the large towns on its systems, and, with the sanction of the shareholders, the directors had occasionally made large grants to the Derby Infirmary. A scheme had recently been put before the Midland Railway Friendly Society, and unanimously approved by it, which involved a weekly contribution from all weekly-paid employees, supplemented by a contribution on the part of the company. The Board had approved the principle of the proposals embodied in this scheme, and subject to its being generally adopted by the staff, was prepared to recommend it to the shareholders. On the basis suggested the company's annual contribution, if the scheme were universally applied, would substantially exceed the present subscriptions, but the alternative would be a much greater sum in rates, and he was confident that the shareholders would approve of the policy of the Board in the matter.

In a leading article published recently in our columns (January 14th, 1922, p. 70) it was pointed out that few large employers of labour have ever contributed sums really proportionate to the possible demands of their employees upon the hospitals. The scheme which was placed recently by the King Edward Hospital Fund before the London hospitals recommended a weekly contribution from employees, which it was hoped would be made at the place of employment by taking the contribution from wages, employers contributing a portion of the weekly payments. The Midland Railway Company, it will be seen, has adopted this idea, and it may be hoped that its example will be followed by other large employers, and that the hospitals throughout the country will benefit accordingly.

THE UNIVERSITY OF LONDON.

In his second lecture on the University of London and its possibilities, delivered at University College on February 20th, the Provost (Sir Gregory Foster) devoted himself again to answering the critics of the decision to accept the Government offer of the site at Bloomsbury instead of purchasing the site at Holland Park. Among other arguments, he mentioned that within a two-mile radius of the Bloomsbury site there were seven medical schools, with more than 3,000 students, as well as university colleges and schools providing for 11,000 students in other subjects. Bloomsbury was already in fact the university centre of London. Although a residential university like Oxford or Cambridge was not possible for London, the residential halls, which at present provided places for 1,040 students, ought to be increased to accommodate 4,000. The greatest need was for residential halls for post-graduate and research students, 90 per cent. of whom came to work within the University. He looked forward also to a great extension of the external work of the University in the shape of public lectures and tutorial classes, for which purpose, again, a

central site was very desirable. During the next twenty years he saw a university "empire" being consolidated in London, with "dominions," practically self-governing, in the shape of the larger colleges, and "dependencies" with smaller powers. One crying need of the University was a great Institute of Public Health. There was a small department in this subject at University College, but quite inadequate for London. The Faculty of Medicine might readily become the greatest part of the University of London were it not for the hampering effect of the examination fetish and tradition, which from the purely examination point of view made it more convenient to the student to get up what he could from textbooks; at the same time a great deal of teaching and research was carried on. The President of the Board of Education (Mr. H. A. L. Fisher), who presided, said that the University of London was a species to itself, unlike any other university in the world, and particularly unlike Oxford and Cambridge. The site had now been finally settled, unless, indeed, the University handed it back to the Government, an action which would be appreciated by the Chancellor of the Exchequer. Although the site at present contained only 11 acres, it was part of a large estate controlled by the Bedford Trust, comprising 50 acres or more, which would, he believed, come into the market during the next fifty years. Therefore the University could expand at leisure and become a worthy place of learning for the students, who, he believed, would come in increasing numbers to London from overseas.

Scotland.

GLASGOW MEDICAL LUNCH CLUB.

AT the weekly meeting of the Glasgow Medical Lunch Club, on February 16th, Dr. E. P. Cathcart, F.R.S., Professor of Chemical Physiology in Glasgow University, was present as the guest of honour, and after lunch gave a most stimulating and helpful address. He made a plea for a more profound and continued study of the normal and its variations in the individual, and welcomed the desire on the part of the practitioner for post-graduate study; but too much of it was, in his opinion, devoted to the study of special branches of disease or of cases of unusual disease. Young graduates set out on their medical life full of enthusiasm and with high ideals based on hospital experience. They soon found that hospital work had not given a true reflection of general practice, and that they had to readjust their earlier ideas. A large part of their work was concerned with trivial conditions, such as coughs and colds, pains and aches, and mild digestive disorders. The immediate result was a feeling of depression owing to the lack of scope provided for their "Osler-crammed" brains, and this was liable to lead them to become the subjects of convention and hypnotic words and phrases. There were fashions in medicine, as in dress, of great variety, and the latest of these was licensed pornography masquerading under the name of psycho-analysis, which was a good thing, but, like all good things, liable to deterioration. The general decline of the death rate, and the greater expectation of life at birth, as shown in vital statistics, were in themselves satisfactory as showing advances in the prevention and treatment of disease, but still much information was lacking regarding the trivial conditions which caused such a loss of time to industry. The National Insurance Act had brought out the fact that from sickness alone there was an annual loss of over 14,000,000 weeks, which was enormous if capitalized at, say, £2 a week. Much of this sickness was preventable and trivial, and made up the ordinary round of the general practitioner. A knowledge of these conditions could only be obtained from the family doctor, not from the consultant, nor from those connected with the more scientific or academic side of the profession. Members of the profession had been too busy studying disease, when they ought to have been devoting much time to the normal and its variations. Such basal data of trivial illness were necessary for further advance in medicine, as only on such a foundation could the new temple of real medicine be reared. In the past they had looked to pathology, which was merely the record of failure, but now they must turn to physiology, which was the science of the normal. His opinion was that if post-graduate work were directed more to fundamental principles than to treatment the practitioner would return to his daily round with greater zest.

LISTER WARD AT GLASGOW ROYAL INFIRMARY.

At the annual meeting of contributors to Glasgow Royal Infirmary, held on February 13th, the decision of the managers that it was not in the interests of the institution to retain the Lister Ward was approved by the meeting. The managers, however, expressed willingness to allow the Lister Memorial Committee to remove the materials of the ward for re-erection, and they agreed that objects of interest and relics relating to the life and period of Lord Lister should be properly displayed in the Infirmary. Mr. James Macfarlane, the chairman, said that while the members of the Infirmary approved the motives of the Lister Committee, they had to point out that they had no ground to spare. The Memorial Fund Subcommittee had asked them to reconsider the decision they had reached several years ago that no part of the old building should be retained. The managers took the proposals into serious consideration, they viewed the site again, and the whole situation was discussed. The result was that they reaffirmed their previous decision that it was not in the interests of the Infirmary that the Lister Ward should be retained. At the same time the managers desired it to be known that they would welcome any proposal for commemorating Lord Lister's connexion with the Infirmary. During the recent controversy in the press it has been alleged, on the one hand, that the managers of the Royal Infirmary had taken a narrow, short-sighted, and parochial view of a sacred trust, possessing potentialities both historical and financial to which they appeared to be blind. There is considerable agreement with the opinion of Lord Blythswood that the Lister Ward should be retained, and there is little doubt that this opinion will be shared by many people both in this country and throughout the world. The ward has already been a Mecca for pilgrimages of scientists from all quarters of the globe. On the other hand, Sir George T. Beatson has expressed the hope that the decision of the directors of the Infirmary not to retain the Lister Ward may be accepted by all interested in the matter, and that no efforts should be made to overturn it either by protest or by agitation amongst the subscribers to the Infirmary. He suggests, therefore, that the Ward might be re-erected on another site, and in connexion with a Lister Memorial Hall, where, by lectures and demonstrations, the good work which Lister initiated as a surgeon might be extended.

CHAIR OF BOTANY AT EDINBURGH.

Sir Isaac Bayley Balfour has intimated his resignation from the chair of botany in Edinburgh University, to take effect from April next. He was born in 1853, and was the son of John Hutton Balfour, who was professor of botany in Edinburgh University from 1845–79; he graduated M.B., C.M. at Edinburgh in 1877, and M.D. (thesis gold medal) in 1883. He was regius professor of botany in the University of Glasgow from 1879 to 1884, and for the succeeding four years Sherardian professor of botany at Oxford. He was appointed to his present chair in 1888, and at the same time became regius keeper of the Royal Botanic Garden, Edinburgh. He received the honour of knighthood in 1920.

Ireland.

THE HEALTH OF THE IRISH NATION.

DR. RICHARD HAYES, T.D., who represents Limerick City and East Limerick in the Irish Parliament, recently delivered a lecture on hygiene, which has been published by the Lecture Society in a pamphlet. Dr. Hayes is one of the nine members of the Irish medical profession who were returned for Irish constituencies in the last parliamentary election. He voted for the acceptance of the Treaty. Much in regard to health reform is expected in Ireland from the new Irish Government, and with such an advocate as Dr. Hayes a good deal should be accomplished. The following are some extracts from his lecture:

"During the past fifty years the death rate in England has been reduced by 35 per cent., in Scotland by 30 per cent., and in Ireland increased by 2 per cent.

"In the past Ireland has been so preoccupied with a struggle for mere existence that many vital national problems have been necessarily overlooked, but to-day the national conscience has quickened and awakened to a sense of the national value of things. No interest in the national economy is of more fundamental importance than the nation's health, and none has been more neglected in the past. There exists here an effete and anomalous Poor Law Medical Service, on which the majority of the Irish

people have to depend for medical treatment. Outside a few of the large cities there is a deplorable lack of hospital services. There is no provision for research, the basis of all really progressive medicine. No independent sanitary service, no school medical service, exist here. There is no national scheme in child or maternity welfare to cope with the enormous wastage of infant life. The housing conditions in the cities are appalling, and the great domain of preventive medicine lies unknown and unexplored. Remembering such things, and the pernicious and subtle methods employed to extinguish the race, one cannot but wonder at that marvellous vitality inherent in the Irish people, who could survive what long ago would have destroyed any other race. That the national health has deteriorated there is, of course, no doubt, and much of that joy of life of the older generation owes its disappearance to that deterioration. One fact alone—the emigration of the flower of the race during the last century—must have had profound effect on its physical and mental fitness. The work before us now, however, is to survey our present position and build up a strong and virile people from what remains here. It is a great work, because a nation to express itself in all its richness and fullness, to realize its complete destiny, to draw to the full on its latent stores of human energy, must be fundamentally healthy. For the success of all health schemes in such a work many things are essential. The establishment of an Irish State is, of course, a prime necessity. Equally important is the co-operation and sympathy of the masses in all such schemes—and this cannot be obtained unless they possess some knowledge of the laws and broad principles of public health, with a realization of their vital significance. An enlightened public opinion is one of the first essentials, and never was it more necessary than now. We are at the beginning of a fresh era, and in the new world coming into being a severe struggle has already begun between nations, and only those of the highest efficiency will stand the strain. In Ireland local administration has just passed into the hands of a new generation fired with high ideals and stimulated by a broad national vision. Notwithstanding their limited powers, a good deal relating to the health and welfare of the community will depend on their zeal and efficiency. Further and greater changes are imminent here, bringing with them big responsibilities on all classes, and it is our duty to be ready and prepared for the work that lies ahead—the building up of a new and greater Ireland. In that great undertaking every class and individual will have their own special work to do; but there is one domain in which every man, woman, and child in the nation can play a part, and that is in laying the foundations of a healthy race. We must all realize that the greatest wealth of a nation lies, not in its soil, its mines, its water power, or its factories, but in the health of its people. Whatever social class one is born into, every one of us is born with a great individual heritage, and if the potential value of that wonderful birthright of health does not fully materialize with us here in Ireland, the failure is due in no small way to ignorance or neglect of the great simple laws of hygiene. We must realize that we have a high responsibility in the preservation of the national health; that such work is not the work of doctors alone; that a healthy race is not built up by skilled sanitarians or scientific legislators, but by the enlightened masses of the people. Every effort must be made to cultivate here a 'healthy conscience.' If every individual unit in the nation observed hygienic laws in his own personal sphere there would be few sanitary problems to trouble us. While the advancement of the public health of a community can of course be assisted by the wider activities of its public bodies, really satisfactory progress can only come through individual action founded on knowledge. Unfortunately, in Ireland there exists no provision in the educational programme of the country to impart such knowledge to the boys and girls of the nation. The remedying of that defect is a crying need. Even in a free Irish State all health schemes will come to naught unless founded on the hygienic education of the people. The housing question, for example, requires urgent attention, but even if satisfactorily solved it may be that the existing evil conditions and results will reappear unless the people acquire hygienic habits and knowledge."

Correspondence.

THE ORTHOPAEDIC HOSPITAL OF THE MINISTRY OF PENSIONS: AN EXTRAVAGANT ECONOMY.

SIR,—On February 16th questions were asked in the House of Commons about the decision of the Ministry of Pensions to abandon the special surgical hospital at Shepherd's Bush and instead to put the in-patients in an old military hut hospital in Richmond Park, and to make provision for out-patients in some more central place in London. In his reply, Mr. Macpherson stated that "the sole reason for this removal is the urgent necessity for public economy," and further that he "had no doubt that the proposed transference of the staff and the equipment to Richmond will be in no way detrimental to the interests of the patients." I cannot share his confidence on this latter point, and am sure that my surgical colleagues at Shepherd's Bush will agree with me.

The efficiency of the work done in this and other similar hospitals has from the first depended on the principle of continuity of treatment and concentration of effort. The system of working has been that when a patient is sent to the hospital the surgeon who sees him carries out any operative treatment required, directs the after-treatment by the special departments by personally seeing the head of the department, explaining what he has done and why. When the patient is well enough to be treated as an out-patient this further treatment is carried out by the same personnel who have seen his progress from the beginning. Further, the visiting surgeons have frequent opportunities of consulting each other.

The effect on the *moral* of the patients of finding themselves treated according to a regularly defined plan has been emphasized too often to need repetition.

The type of case which is being treated is changing. During the war there were many recent fractures with extensive open wounds. Two years ago these were healing up, and we were dealing with ununited and malunited fractures with ankylosed and flail joints, and, of course, always with results of injuries of muscles and nerves.

To-day a large proportion of these more obvious defects have already been dealt with by bone graft or other operations. The patient may have been away for months, and is now being sent back because, though the fractured arm may now be firmly united and function has returned, there remains some particular movement which he requires in his particular work which he cannot perform, and asks for an operation. Each case becomes, therefore, a problem by itself.

Thus the surgical work is becoming more difficult and also, it may incidentally be said, more interesting. In order to make these men fit to earn their living it is more necessary than ever to have every means of treatment thoroughly co-ordinated. This is not a mere matter of material equipment; it depends also on co-ordinated work among the staff.

Under the new arrangement there must be a double equipment—one at Richmond and one at the out-patient centre. At present if Mr. A. has a particularly difficult case on which he wants to consult Mr. B., even if the latter is seeing out-patients, he is in the building, but under the new arrangement the surgeons will have to divide their time and energies between two institutions miles apart. *X* rays taken when the patient is first seen in the out-patient department will have to be sent out to Richmond when the patient, some weeks later, is admitted for treatment there, then back again when the man becomes an out-patient.

Inevitably there will be much dissipation of the surgeon's time and energy when working under these conditions. This means less effective results in some patients and in most delay in getting the results. This point should be carefully considered, for payments of allowances to men waiting for treatment may easily amount to a large sum when the number of patients dealt with amounts to several thousand every year. From inquiries made the financial difficulty between the Government and the Hammersmith Board of Guardians, in whose infirmary the hospital is housed, seems to have arisen as follows:

From 1916 to 1919 the hospital was military, and no rent was paid to the guardians. In 1919 the whole institution, with all the new additions built by the War Office with the generous assistance of the British Red Cross, was handed over to the Pensions Ministry. The guardians then asked for and received a rent of £8,000 a year. In 1921, finding that the outgoings to meet expenses on the buildings exceeded this by £1,300, the guardians wrote to the Ministry of Pensions suggesting that the rent should be increased to £10,000. Several months passed without any definite reply being given, so someone suggested that they might get a reply if they were to give the Pensions Ministry notice to quit unless it paid £14,000 a year. The Minister of Pensions offered £12,000, which was refused.

It is difficult to believe that a deadlock like this can be allowed to interfere with the welfare of wounded soldiers. The ratepayers and guardians of Hammersmith were offered £12,000, which was more than they had themselves asked for a few months earlier, therefore they probably would not lose anything by accepting this sum; and it is not pleasant to think that they would wish to make a financial profit at the expense of the wounded men, even though they may have grounds for being annoyed with the delays of a Government office. On the other hand, the Ministry has a duty to the Treasury, and must resist what seems to it unfair financial pressure. It is sincerely to be hoped that a way may be found for reopening negotiations and maintaining a great institution in its fullest vigour.—I am, etc.,

London, W., Feb. 20th. D. MCCRAE AITKEN.

A DIPLOMA IN TUBERCULOSIS.

SIR,—I venture to forward you a copy of the regulations for the Tuberculous Diseases Diploma (Wales),[1] which has just received the sanction of the University authorities, and the first examination for which will be held at Cardiff, I hope, on the first Tuesday and Wednesday of July next.

The reasons that are thought to render such a diploma desirable are as follows:

The number of Government appointments for whole-time tuberculosis work is now very large, and likely to increase in the future. In order to find suitable recruits for these appointments it is necessary that young medical men should have an opportunity of taking up special courses in the study of this disease and presenting themselves for an examination, the successful passing of which will provide them with a diploma as evidence that they have devoted a period of real study to the disease which they are about to deal with.

The extreme importance of pulmonary tuberculosis has undoubtedly tended to concentrate attention upon this form of the disease. The institution of a standard examination, study for which must necessarily involve the examination of the disease as a whole, including its surgical characters, must raise the standard of knowledge and improve the methods of dealing with tuberculous patients; while it is undoubtedly true that our preventive measures are likely to be based on sounder lines if greater account is given to tuberculosis as a general rather than a local disease.

It is hoped to ensure to the T.D.D. (Wales) examination the high standard that alone can make a diploma worth having, and to this end it is proposed to invite external examiners of recognized position as authorities on medical and surgical tuberculosis to assist in conducting the examinations.

It is realized that at the present moment difficulties may arise for would-be candidates in obtaining the courses of instruction which are laid down in the regulations for admission. These difficulties appear inevitable under the circumstances, and can only be solved when universities, medical schools, and tuberculosis hospitals are prepared to initiate the classes of instruction which are necessary for candidates belonging to Category B. The imperative necessity for these definite courses in the case of young medical men without whole-time experience of the disease will be generally recognized. Arrangements are being made to give these special courses to medical graduates in the Welsh National School of Medicine at Cardiff, and particulars can be obtained on application to the Professor of Tuberculosis or to the Registrar.—I am, etc.,

S. LYLE CUMMINS,
Professor of Tuberculosis, University College of South Wales and Monmouthshire.

Cardiff, Feb. 16th.

THE TREATMENT OF EMPYEMA.

SIR,—I have read with interest both the annotation in the BRITISH MEDICAL JOURNAL of February 11th, entitled "A physician on the surgical treatment of empyema," and Dr. J. A. Nixon's paper on "Progress in the treatment of empyema" which is there reviewed. To quote Dr. Nixon's words:

> "Routine resection and drainage undoubtedly save many lives, and not infrequently good functional recovery takes place in the affected lung. But we cannot be ignorant of the numerous instances in which the patient recovers with a sadly impaired lung, with a lung that remains hopelessly contracted, or even with a sinus in the chest wall which obstinately refuses to close."

Two methods are mentioned as improvements on the orthodox treatment by drainage of the pleural cavity after excision of a portion of a rib. These are (*a*) aspiration, which, if necessary, is repeated, and (*b*) thoracotomy by a long incision through an intercostal space, without excision of rib, but of sufficient size to permit of free access to the pleural cavity; through this incision the hand is introduced, all lymph and fibrin are removed, and the chest wall is completely closed at the conclusion of the operation. That the unfortunate results mentioned by Dr. Nixon are not infrequently met with is certainly true; and my object is to bring forward certain points in the after-treatment of the usual operation, which I have found of the greatest value, rather than to criticize these suggested alternative methods of treatment.

I should, however, like to point out that aspiration has been extensively tried, and though "it has long been known that pneumococcic empyemas sometimes clear up after aspiration alone," yet this fortunate result occurs in only a small proportion of cases, and on this account has not found general favour with physicians. Aspiration is commonly employed in the more serious cases to give relief and as a preliminary to excision of the rib and drainage of the pleural cavity. I can also recall operating on two cases which had been treated by repeated aspiration, which had failed to have a satisfactory result, and had set up a troublesome complication—cellulitis of the chest wall, which required several additional incisions.

Though I have on several occasions made an incision through an intercostal space as a preliminary or palliative measure in cases of pneumococcic empyema where the condition of the patient has been very grave, I have no experience of the other method of treatment suggested by Dr. Nixon. The operation strikes one as considerably more severe than the usual procedure, especially in a patient who is gravely ill, and one questions the desirability of interfering with layers of exudate which may have a protective function.

For some twelve years or so I have used Bier's treatment by suction cups as a routine method after resection of rib and drainage for empyemas, the great majority of which have been pneumococcic. The operation is performed in the usual way and a large rubber tube is inserted. On the second or third day this is removed, cleaned, and shortened, so that it projects but a short distance into the thoracic cavity. A large-sized Bier's cup is then fitted over the wound, with the drainage tube about the centre, and suction is applied by compressing the rubber bulb. The suction is kept up for about five minutes, and, after a few minutes' interval for the oedema to subside, may be repeated for a similar period. The cup is then removed, the wound and the tube again cleaned, and a dressing applied. This treatment is repeated twice a day. Usually the discharge rapidly diminishes, the temperature comes down, and the general condition of the patient improves. As the wound contracts the large tube is replaced by a smaller one. The treatment is continued as long as there is any discharge, and until the superficial wound has closed to such an extent as to render drainage unnecessary. There may be some bleeding from the superficial granulations, but this is not important, and can be obviated by diminishing the amount of suction. One minor advantage is that the patient is usually interested in the treatment.

There are several important practical points to bear in mind. The cup must be of sufficient size—for an adult at least three and a half inches in diameter. It must fit accurately and easily to the chest wall; this may be a real difficulty, for these cups are usually made for application to a flat surface. It is, however, possible to get them shaped so as to fit readily to the curve of the chest.

The usual rules in all applications of Bier's treatment must be observed—namely, that no pain must be caused, and that the suction must not be too great or continued for too long a time. From five to ten minutes twice a day will suffice. The drainage tube should always be in position while the treatment is being carried out, except possibly in the later stages where the wound is merely a sinus, as otherwise the suction may have a valvular action, drawing the edges of the superficial wound together, and preventing any action on the pleural cavity. The cup, of course, must be carefully cleaned after use, and before it is applied to the wound it should be sterilized by standing in some antiseptic solution.

The suction cup acts in three ways:

1. It sucks out any discharge which may remain in the pleural cavity.
2. It must produce some passive hyperaemia of the pleura, and so exert the antibacterial action which it is generally agreed is the result of the passive hyperaemia produced by Bier's treatment.
3. As the result of the diminished pressure in the pleural cavity it must have some effect in promoting expansion of the lung.

One is occasionally asked by a physician to see a case of empyema that has been operated upon, and that after some weeks is not doing well, with a view to providing freer drainage. These cases usually do remarkably well with Bier's treatment. As an example I will mention a case that I have recently been asked to see by my colleague, Dr. Fawcett.

A boy, aged 8 years, was operated upon for empyema on January 9th, 1922. The temperature promptly dropped to normal and remained so for a week; it then rose again, and from January 16th to February 3rd showed a typical septic chart with a morning temperature of about 99° and an evening swing to between 102° and 103°. When I saw him on February 3rd there was a sinus from which a little pus was oozing, and as no discharge appeared to escape through it the drainage tube had been omitted. I suggested

[1] The regulations are printed at p. 333.

that the sinus should be dilated with dressing forceps, a small drainage tube inserted, and Bier's treatment started twice daily. The temperature came down at once. On February 4th the evening temperature was only 99.4°, and since then it has never risen above 99°. The discharge has nearly ceased, the wound looks quite healthy, and the general condition of the boy has greatly improved.

The object of treatment should be, to quote Dr. Nixon's words, "the ultimate restoration of function as well as the immediate saving of life." I believe the line of treatment described above to afford the simplest and surest means of attaining these ends.—I am, etc.,

London, W., Feb. 14th. PHILIP TURNER.

MALARIAL GLYCOSURIA.

SIR,—In your issue of February 4th there appears a letter from Dr. Orlebar, in which he states that an instance of glycosuria published by us in the BRITISH MEDICAL JOURNAL for August 26th, 1921, as of malarial origin, was in fact a case of glycosuria due to hyperthyroidism. After carefully considering our notes, of which only a brief abstract was given in our paper, we are still of our original opinion, for the following reasons:

1. The pulse was 120 on admission only, when the temperature was 99.8° and the man was getting over an acute attack of malaria. The next day the temperature was 99° and the pulse 80, and on this day the urine showed 8.5 grams of glucose per litre.
2. The glycosuria persisted in spite of absolute rest in bed, and also in spite of 30 grains of quinine a day by the mouth for a long period; it only disappeared completely after this treatment was intensified by a course of intramuscular injections of quinine. It is our experience that all manifestations of malignant tertian malaria respond much more satisfactorily to quinine administered in this form than to quinine by the mouth.
3. The man was examined by a medical board at Brighton in August—two months after leaving Orpington. They found "no active signs of malaria," but much more definite signs of hyperthyroidism, including exophthalmos. In spite of this his urine then contained no sugar.

Dr. Orlebar gives also two reasons against the glycosuria being of malarial origin:

1. That the man had had much quinine before coming to Orpington.
2. That he continued to have much malaria after leaving Orpington.

Both these reasons appear to us to be unsound. In the first place, Sir Ronald Ross has pointed out the prime necessity of *regular* administration of quinine in the treatment of malaria. A note made at the Brighton clinic in March states: "Taking quinine, Meyer's test negative." It is apparent, therefore, that as long as the man was an out-patient, the regularity of his quinine treatment could not be guaranteed.

In the second place, apart from the findings of the Board in August, a further note from the Brighton clinic states that the man was admitted to Endsleigh Gardens Hospital in October and very shortly afterwards discharged as showing "no evidence of malaria."

To sum up: the man had definite glycosuria, which persisted until he had had a thorough course of quinine treatment *under supervision*. It then disappeared, as also did the signs of malaria, if the findings of the Brighton Board and Endsleigh Gardens Hospital are correct.—We are, etc.,

ALDO CASTELLANI,
J. GRAHAM WILLMORE.

Ministry of Pensions Hospital,
Orpington, Kent, Feb. 15th.

CANCER RESEARCH.

SIR,—Considerable publicity has been given recently to the work of the Imperial Cancer Research Fund, the Middlesex Hospital, and many other institutions, in the columns of the daily press.

Among the many other deserving institutions engaged in this research, not mentioned, it may be well to remind your readers of the work which is being done in the physiological and bacteriological laboratories of King's College, which has been carried out for many years by Dr. J. A. Shaw-Mackenzie, and without any financial assistance.

The generous offer of Lord Atholstan and of Sir William Veno towards cancer research work raises the question of the medical side in cancer treatment, and encourages this aspect of the problem. That this aspect of the problem is justified may be gathered from the facts that cancerous tumours in the human subject may remain stationary over considerable periods of time, and that disappearance of cancerous growths occurs spontaneously in a large percentage of inoculated tumour mice. These facts seem to indicate that defensive processes of the body are at work.

In this connexion one of the results of the laboratory investigations is that the blood serum of recovered mice shows that natural chemical processes are at work, and that a natural and increased production of lipase and of fatty acids in the tissues are important factors in the protective mechanism. The same reactions of the serum held good in recovered tuberculosis and other bacterial diseases examined. It has been shown, further, that sodium oleate, amongst other substances, increases the action of lipase *in vitro* and *in vivo*, and beneficial results have long been reported from its use in certain cases of inoperable cancer.

It is accordingly not unreasonable to hope that it is in the direction of reinforcement of natural processes that advances in treatment may be made. It was on this basis that (1) preparations of saponified extracts derived from the fatty material and lipoids of cancerous and tuberculous material have been made, and the same suggested from other pathological tissues. Further investigations are being continued on the (2) trial and therapeutic efficacy of these preparations; (3) examination of serums, including complement fixation tests in cancer; (4) the composition of cancerous material, with special reference to the fats and fatty acids.

It is interesting to note that the work of C. C. Warden at the University of Michigan and St. Josephs of Mercy Hospital, Ann Arbor, which is reviewed in the February number of *Medical Science*, issued by the Medical Research Council, London, appears to be on similar lines. While, however, in this work "the specific antigens of cells, bacterial and somatic," are attributed to suitably dispersed fatty acids, the importance in particular of the bacterial fatty acids and their sodium salts is evident in immune processes.—I am, etc.,

King's College, Feb. 18th. W. J. SIMPSON.

THE PREVENTION OF VENEREAL DISEASE.

SIR,—I ask for space for a short comment on Lord Gorell's letter in your issue of February 18th in which he refers to me as knowing well the efforts he has made in the direction of demanding a public inquiry conducted by men of independent standing on the one essential point which divides the two societies, and, in fact, was the sole reason of the establishment of the Society for Prevention of Venereal Disease.

In three private interviews which took place in January, 1921, between Lord Gorell and myself, I was strongly impressed by his evident desire to have this important matter thrashed out in all its aspects independently of Government or other officials. I had become convinced of the necessity of such an inquiry for some few years. Lord Gorell and I were agreed that no conference between the two societies alone could be fruitful. For the one point at serious issue between them was an indivisible one as regards the S.P.V.D.

Since the occasion of these interviews I know of no further efforts by Lord Gorell in the above-mentioned direction. But the following facts do not indicate that the National Council for Combating Venereal Diseases or its president are trying to assist in any measure towards the composing of the present difficulties, which are doubtless deplorable.

1. In February, 1921, a special committee of the Birth Rate Commission, at which both the societies were represented, issued a report that practically supported the main arguments of the S.P.V.D. Soon afterwards the Bishop of Birmingham invited the two societies to a round-table conference with him, which the S.P.V.D. accepted on condition that the general findings of this report should be accepted. This condition led to the refusal of the N.C.C.V.D. to attend the conference, which consequently was not held.

2. In June, 1921, the British Humane Society, consisting largely of many important public men, invited the N.C.C.V.D. and the S.P.V.D. to send representatives to a conference on this matter. The S.P.V.D. accepted the invitation without making any condition. The N.C.C.V.D. declined it.—I am, etc.,

Feb. 20th. H. BRYAN DONKIN.

PREVENTION OF VENEREAL DISEASES IN THE AUSTRALIAN IMPERIAL FORCE.

SIR,—Sir Archdall Reid has asked me to state what I know of the facts regarding the "compulsory issue of disinfectants, accompanied by both printed and verbal instructions in their use, to all men proceeding on leave" in the Australian Imperial Force. My experience is that these regulations were

much more honoured in the breach than in the observance. I was in Paris from April, 1918, to May, 1919, and I do not believe that 10 per cent. of the Australians arriving in Paris on leave had had disinfectants issued to them. I met practically every train for several months, and I know of my own knowledge that the men were without prophylactic outfits. I communicated with the D.M.S. and each A.D.M.S. in the Australian Divisions, and once or twice succeeded in getting a small parcel of fifty outfits, but usually these medical officers could send me none, because they were out of supplies themselves. I bought supplies myself in Paris, and for some of these received payment later from the A.I.F.; they paid me altogether about £120 on Paris chemists' receipts. The Australians and other British troops were supposed to be able to get tubes from the Pepiniere Barracks (British Medical Report Centre), but sometimes for a week or ten days or longer the barracks had no tubes at all. In any case only one tube at a time was issued from there, and men proceeding on leave to Rome, Nice, etc., were actually sent away to these areas, where there were no ablution rooms in existence, with one single-treatment calomel tube in their pockets. This was the army system. I tried to see every man proceeding on leave to Nice or Rome, and give him a prophylactic outfit containing at least ten calomel tubes, ten 2-grain tabloids of potassium permanganate, and a small syringe and some cotton-wool. During 1919 most A.I.F. men who could afford it came to Paris several times on leave officially or unofficially. Many thousands of men were absent without leave at different times, and of course prophylactic outfits were not issued to such men before they left camp, and they stood clear of Paris headquarters to avoid arrest. In England the same conditions prevailed. In May, June, and July I was lecturing on Salisbury Plain in different Australian and New Zealand camps. The officers in command were usually under the belief that outfits were being issued to men going on leave, and that this covered the matter. It did not—because so many men went away for week-ends without permission, and because there was frequently shortage of supplies. I always settled the matter thus on the lecture platform: Hands up those men who have been on leave, officially or unofficially, without prophylactic outfits. As a rule from 80 to 90 per cent. of the audiences promptly held up their hands. As to the issue of disinfectants being "compulsory," my opinion always was that men should carry a prophylactic outfit as a "town-dressing" in the same way as they carried a "field-dressing," but actually the Anzacs always had the option of refusal. I have no doubt that the Australian medical officers did their best to instruct the men and provide them with disinfectants from 1914 to 1919. But there was a war on at the time!—I am, etc.,

London, W., Feb. 20th. ETTIE A. ROUT.

HENRY OF NAVARRE.

SIR,—Some short time back Sir Charles Ballance in his Thomas Vicary Lecture, speaking of multiple trephining, mentioned that the classic instance was that of Henry of Navarre, whose surgeon trephined him twenty-seven times. This statement has passed without challenge; but was Henry IV ever trephined? I have seen no allusion to it in contemporary history, and it is not mentioned in the memoirs of the Duc de Sully, which are practically an intimate biography of Henry IV from his early manhood until his death.—I am, etc.,

London, N.W., Feb. 18th. H. A. CLOWES.

GERMAN-MADE X-RAY APPARATUS.

SIR,—A brief study of the contributions which have recently appeared in your pages discloses the unpleasant fact that the medical profession are already patronizing German manufacturers by purchasing *x*-ray and electro-medical apparatus of German origin, in particular equipments for deep therapy treatment.

As equally good, if not superior, apparatus is manufactured in this country, there is no excuse for purchasing these appliances from our late enemies.

There are nearly 2,000,000 unemployed in this country, and it is therefore everyone's duty to assist in stimulating home industries rather than those of Germany; we wonder whether those who place their orders abroad appreciate the inevitable result of their action.

If adequate support is not forthcoming for the British manufacturer, he obviously cannot continue, and will gradually cease to construct British *x*-ray and electro-medical apparatus, and seek the easier and possibly more remunerative path of representing a foreign house and so satisfying the demands of the English medical profession.—I am, etc.,

February 14th. A MANUFACTURER OF BRITISH APPARATUS.

AN IMPROVED METHOD OF DEMONSTRATING LANTERN SLIDES.

SIR,—Use of the lantern for lecture purposes in the common fashion offers several inconveniences. First, the room must be darkened, a condition that hinders note-taking, prevents demonstration of specimens, and favours somnolence; secondly, the windows must be closed, a great disadvantage in warm weather; thirdly, a lantern attendant is necessary, and the number of slides to be shown may be few or many; fourthly, arc illumination is required. In order to overcome these and other objections, I devised, and since October last have had in constant use, the following modification.

The lantern is provided with a gas-filled incandescent lamp (1,500 c.p., 7.5 amp.) and, instead of the usual method whereby an assistant projects the image on the wall behind the lecturer—that is, some 15 feet from the front row of students—in the method under description the lecturer himself operates the lantern from his bench, controlling the light by an ordinary tumbler switch. The image is projected upon and viewed through a ground-glass screen placed 3 feet from the front row of students. Hence the usual method, in which the projection lens points towards the lecturer and a large dead-white receiving screen is situated behind him, is replaced by a method in which the projection lens points towards the audience, and a small translucent screen intervenes between lecturer and audience.

As a result of its nearness to the observer the image need not be so large for proper vision, and a ground-glass screen of which each side measures 26 in. is sufficient. But the principal point is that, owing to the sufficiency of a smaller image and its nearness to the observer, the law of inverse squares governing illumination operates at so great an advantage that the image on the screen is clearly visible in diffuse daylight or ordinary artificial illumination of the lecture theatre even in the back rows, 20 ft. from the ground-glass screen.

For a lamp using 7.5 ampères special wiring is necessary, but Messrs. Fallowfield, Charing Cross Road, are supplying a complete outfit, consisting of lantern, lamp (800 c.p.) resistance, screen, and stand (cost £15), that can be worked from the ordinary lighting circuit by means of an adapter.

One proviso is necessary: It is impossible for the apparatus to compete with direct sunlight. The blinds must be drawn on that side of the room into which the sun's rays enter. If this be doné, an observer at a distance of 30 to 40 feet from the screen can see the image well, even at noon on the brightest day in October. Whether he will be able to do so in June I do not yet know. I believe the modification will be of great practical use to teachers.—I am, etc.,

W. S. LAZARUS-BARLOW.

Cancer Research Laboratories,
Middlesex Hospital, W., Feb. 17th.

A CONFUSION OF NAMES.

SIR,—I shall be greatly obliged if you will allow me the opportunity of stating in your columns that I neither have nor ever have had any kind of connexion whatever with the commercial preparation known as "dimol," or any other "antiseptic" of commerce.

It is not possible for me to find the leisure to reply personally to the communications and inquiries which continue to reach me from time to time (owing to an inconvenient accidental similarity between my name and another) regarding the merits or demerits of advertised antiseptics. But it seems to me undesirable to appear, by silence, to admit either the accuracy and propriety or the relevancy to myself of opinions addressed to me by correspondents under a misapprehension.—I am, etc.,

University College, Oxford, Feb. 16th. E. W. AINLEY WALKER.

MORE persons were sent to asylums for the insane in New York State in 1921 than in any previous year, according to the *Journal of the American Medical Association*. At the end of 1921 there were 39,736 patients in the thirteen hospitals for the insane in the State, 1,445 more than there were a year previously, and 6,642 more than the nominal capacity of the hospitals.

Obituary.

DR. BERTRAM HAROLD KINGSFORD died on January 29th, at Sherwood, Woking, from acute leukaemia of under three weeks' duration, at the age of 51. Bertram Kingsford was born in Chelsea and educated at Merchant Taylors School, London, and received his medical training at St. Thomas's Hospital. He became M.R.C.S., L.R.C.P. in 1892, M.B.Lond. in 1895, and M.D.Lond. in 1905. After leaving St. Thomas's he held various resident posts in London and other hospitals, having been house-physician and house-surgeon at the West London Hospital. For two seasons he was surgeon on the Nile steamers. He went to Woking twenty-five years ago. In the course of a busy professional life he was always ready to give the benefit of his medical knowledge for the furtherance of any good work. He had been actively engaged with the Woking Division of the British Red Cross Society, instructing many in first aid and nursing for many years. He was one of the honorary medical officers of the Victoria Cottage Hospital. For some years he had held the appointment of police surgeon to the Woking Petty Sessional Division, public vaccinator of the Woking District under the Guildford Union, and certifying factory surgeon to the district. Dr. Kingsford was a prominent Freemason, being a member and past-master of the Weyside Lodge and a member of the Chesselden Lodge; he was also an old member of the British Medical Association. A colleague writes: Kingsford built up a large practice in Woking, by reason of his untiring efforts, great sympathy and kindness; knowing the end that awaited him, his fortitude, bravery and unselfishness were an example to all. He will be missed sadly by his devoted patients, friends and colleagues. The memorial service, which was most impressive, was attended by hundreds, representative of various interests, to pay a last tribute to the memory of their friend. His remains were cremated and buried at Brookwood Cemetery, beside the ashes of his wife, who died three years ago. Kingsford leaves one daughter to mourn his loss.

WE regret to announce the death, on February 13th, of Mr. CHARLES WRAY, of London and Croydon. He received his medical education at the London Hospital, and took the diploma of M.R.C.S. in 1881, proceeding to the F.R.C.S. in 1886. He specialized in ophthalmology, and was ophthalmic surgeon to the Croydon General Hospital and to the infirmary and council schools at Croydon. He was a member of the Ophthalmological Society and of the British Medical Association. Dr. E. H. Willock, late honorary secretary, Croydon Division, writes: By the death of Charles Wray the British Medical Association has lost a staunch supporter. He was a most active member of the Croydon Division and Surrey Branch, and no clinical meeting was ever complete without an exhibition of interesting cases by him. As an ophthalmologist he was frequently in advance of the times. He was a skilful and careful operator. Of vast experience, his opinion was much sought after and valued for the soundness of its judgement. Wray was a great and original thinker on many subjects. He was generous, almost to a fault. His left hand never knew what his right hand did, and everything was bestowed without publicity or ostentation. Many of his professional brethren have lost a good friend in Charles Wray.

DR. AUGUSTINE MARSHALL of Lowestoft died on February 2nd. Born in Leeds in 1866, he was educated at St. Thomas's and the London Hospitals. He took the diploma of M.R.C.S., L.R.C.P., and L.S.A. in 1894, the M.D.Brux. in the same year, and the D.P.H. in 1899. For some twenty years he had been medical officer of health for the borough and port of Lowestoft, and was also school medical officer. He was always mindful of the welfare of the town as a health resort and brought about many hygienic improvements. Dr. Marshall had not been in good health lately, but continued to attend to his official duties and to the large number of cases recently at the sanatorium, where he was taken ill suddenly. He was formerly honorary assistant surgeon to the Lowestoft Hospital, held many public appointments, and was a member of the North Suffolk Division of the British Medical Association. A keen yachtsman, a hard-working and painstaking official, in private practice considerate and comforting, his loss will be greatly felt in Lowestoft.

THE death is announced of Dr. GEORGE SAMUEL WILD of Freshfield and Bootle. He was educated at Liverpool, where he became Derby scholar in clinical medicine and surgery in 1884, in which year he took the diplomas of M.R.C.S.Eng. and L.R.C.P.Edin. In 1892 he took the D.P.H.R.C.P.S.I., and graduated M.D.Durh. in 1900. He was consulting physician to the Bootle Borough Hospital, and showed great interest in public affairs. He served as a town councillor for a long term, and was appointed Mayor of Bootle in 1901. He was created an alderman in 1903, but retired in 1908. In November, 1903, he was appointed a Justice of the Peace, and continued to act on the rota ever since. He was a member of the Southport Division of the British Medical Association. Dr. Wild is survived by his widow and a daughter.

DR. THOMAS FRANKLIN PEDLEY died suddenly of heart failure at Bridge House, Rangoon, on January 13th, aged 67. He was the eldest son of the late George Pedley of The Haven, Surrey, and was educated at Guy's Hospital, taking the diplomas of M.R.C.S. and L.S.A. in 1876, and the M.D. of Brussels in 1879. Shortly after he went out to Burma, and had practised in Rangoon for over forty years, holding for many years the post of health officer of the Port of Rangoon, and latterly that of honorary medical officer of the Dufferin Maternity Hospital. He joined the Rangoon Port Defence Volunteers as medical officer in 1880, rose to the rank of surgeon lieutenant-colonel, and received the Volunteer Officers Decoration in April, 1899. He also held the first class gold medal of the Kaisar-i-Hind Order.

DR. JOHN GORDON LESLIE, late temporary Captain R.A.M.C., died at Guildford on January 23rd, aged 57, of septicaemia, caused by a scratch from a needle while performing a *post-mortem* examination. He was educated at Edinburgh, where he graduated M.B. and C.M. in 1893, and before the war was in practice at Newent, Gloucestershire. He joined the R.A.M.C. as a temporary lieutenant on August 1st, 1917, became captain after a year's service, and during the war served in Egypt. He was on board the *Braemar Castle* when she was torpedoed in the Mediterranean.

LIEUT.-COLONEL GEORGE HERBERT LE MOTTÉE, R.A.M.C. (ret.), died in Guernsey on January 18th, in his seventy-second year. He was educated at Elizabeth College, Guernsey, and Marlborough, and at King's College Hospital; he took the diplomas of M.R.C.S. and L.S.A. in 1872, and became M.D. of St. Andrews in 1884. He entered the Army Medical Service in 1875, passing into it at the head of the examination list. His military service was spent chiefly on foreign stations—South Africa and India. His last appointment was in India, as head of the Military Hospital in Quetta, an appointment he held for four years. He returned home on sick leave in 1901, and shortly afterwards retired. In 1902 he returned to his native island, and in the same year was elected a Jurat of the Royal Court. During almost twenty years of public service he held the office of Supervisor and Treasurer of the States for two years, and was also President of the St. Peter Port Harbour Committee and of the Board of Health. In the latter capacity he was instrumental in effecting many improvements and innovations, often in the face of great difficulties. He had a very large circle of friends, and his old-fashioned courtesy possessed a peculiar charm of its own. Colonel Le Mottée married in 1889, and his widow and two daughters survive him.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on February 17th the following were among the degrees conferred:

M.B. AND B.CH.—E. L. Dobson, L. P. Costobadie, K. J. Yeo.
M.B.—J. M. Lawrie.

UNIVERSITY OF BRISTOL.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—*P. Phillips, †M. Critchley, W. K. A. Richards. *Part II (Completing Examination)*: Phyllis Beames, Madge E. Golding, W. A. Jackman, Winifred G. Nott, Victoria S. Tryon. *Part I (including Forensic Medicine and Toxicology)*: B. A. Crook, J. M. Evans, Constance L. Griffiths, F. J. Hector, Marguerite G. Hughes, Frances M. Jones, A. J. Keevill, E. C. K. Kenderdine, Doris M. Pullen, J. A. L. Roberts, H. L. Shepherd. *Part I only*: F. H. Bodman, Carrie H. Osmond, H. J. H. Spreadbury.

* With first class honours. † With second class honours.

CH.M.—*(Gynaecology)*: R. S. S. Statham. *(Laryngology)*: E. Watson-Williams.

D.P.H. *(Part I only)*.—B. A. Astley-Weston.

THE WELSH NATIONAL SCHOOL OF MEDICINE.

THE TUBERCULOUS DISEASES DIPLOMA, UNIVERSITY OF WALES (T.D.D. WALES).

Regulations: Curriculum and Certificates.

CANDIDATES for the Tuberculous Diseases Diploma (T.D.D.) must possess a medical qualification registrable for practice in Great Britain and Ireland, be not less than 25 years of age, and *either*,

Category A, have held, for a period of not less than five years, whole-time appointments for work on tuberculosis, and presented the following certificates: (*a*) A certificate of general suitability for work in connexion with tuberculosis, signed by a tuberculosis physician, medical superintendent, medical officer of health or other medical man under whom or with whom the candidate has worked for at least one year. (*b*) Certificates in support of the fact that the candidate has worked for five years in whole-time tuberculosis appointments, signed by the representatives of the authorities for whom the work was performed, or by the administrative medical officer concerned;

or, *Category B*, have held a registrable qualification to practise for at least one year, and presented the following certificates: (the courses may be taken concurrently) (*a*) A certificate of satisfactory pursuance of a course of consecutive post-graduate study of the clinical and epidemiological aspects of tuberculosis of six months' duration at a recognized university, medical school, or hospital where such a course is given. (*b*) A certificate of satisfactory pursuance of a course of consecutive post-graduate practical study of the pathology and bacteriology of tuberculosis of three months' duration at a tuberculosis laboratory or a recognized general laboratory where such a course is given. (*c*) A certificate of three months' satisfactory attendance at a tuberculosis institute or dispensary. (*d*) A certificate of general suitability for work in connexion with tuberculosis, signed by a professor of tuberculosis, or the Dean of the Medical Faculty, or the registrar of the hospital where the course of six months' duration covered by certificate (*a*) has been satisfactorily pursued.

Examination.

The diploma will be granted to such candidates as pass an examination divided into two parts, as follows:

Part 1.—(*a*) A written examination on the clinical and epidemiological problems of tuberculosis. (*b*) Oral and practical work, including the examination of patients, the recording of the physical signs found to be present, the recognition of pathological specimens, and a *viva-voce* examination.

Part 2.—A written *and practical* examination on the pathology and bacteriology of tuberculosis. But in the case of candidates of Category A, Part 2 may be remitted on the submission and acceptance either of a thesis setting forth the results of clinical or epidemiological investigation carried out by the candidate in connexion with tuberculosis, or of reprints or copies of not less than two original articles on tuberculosis published by the candidate in the medical press.

An examination in each part will be held annually on the first Tuesday and Wednesday of July in each year. Notice of candidature, together with the entrance fee of £10 10s. and the necessary certificates, must be forwarded to the Registrar of the University, University Registry, Cathays Park, Cardiff, not later than June 18th.

Medical News.

IT is understood that Sir Alfred Mond has made substantial progress in negotiations with various authorities and interests with the object of getting agreement for a Pure Milk Bill. His hope is to introduce and pass a measure this session, but that may depend on the propinquity or otherwise of a general election. The probability is that the lines for legislation would be the establishment of a standard for milk, and the grant of greater powers to local authorities for inspection of dairies. An important point not yet decided is whether the exercise of such powers should be compulsory or optional. The establishment of a standard would not necessarily debar the sale of lower grade milk.

AT a meeting at Essex Hall, on February 21st, the University of London Labour Party adopted as its parliamentary candidate Dr. W. H. R. Rivers, F.R.S., Praelector in Natural Science, St. John's College, Cambridge. Mr. Sidney Webb, the candidate at the last election, who is standing for another constituency, proposed the adoption of Dr. Rivers, and among those who spoke in his support was Sir Arthur Newsholme, who described Dr. Rivers as the most advanced and original anthropologist in this country, whom the University would honour itself by electing. The proposal was unanimously approved; and Dr. Rivers, in accepting the invitation to stand, mentioned that he was himself a London graduate, and that his whole academic career until he was 30 years of age had been passed in London University. He expressed his whole-hearted adherence to the Labour programme, which as a scientist newly turned to politics he found very satisfying on account of its clear-cut principles. He criticized the Geddes proposals so far as they related to education. The meeting was small, but several persons of distinction sent messages. Sir Sydney Russell-Wells is the Conservative candidate.

THE special six weeks' course in surgery, arranged by the Fellowship of Medicine and Post-Graduate Medical Association, began on Monday last, and will be continued during the next five weeks. There is a morning and afternoon session on each day, and the appointments have been so arranged as to involve a minimum of travelling. Full particulars can be obtained from the Secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.

AT a meeting of the medical staffs of voluntary hospitals in Birmingham, held on February 13th, Mr. Albert Lucas and Mr. William Billington were elected representatives of the Birmingham Voluntary Hospitals Committee appointed to assist the Commission charged with the distribution of the Government grant of £500,000 for the benefit of voluntary hospitals, and for the co-ordination of services and appeals.

MR. JOSEPH BARCROFT, F.R.S., Fellow of King's College, Cambridge, delivered the sixth Harvey Society Lecture at the New York Academy of Medicine, on February 11th, on "The *raison d'être* of the red corpuscle."

THE programme for the ensuing session of the Child Study Society, London, includes a lecture by Mr. Macleod Yearsley, F.R.C.S., entitled "A plea for the deaf child," on April 6th, and a paper on April 27th on "The natural defences of the upper air passages," by Dr. Octavia Lewin. The meetings are held on Thursdays, at 6 p.m., at the Royal Sanitary Institute, Buckingham Palace Road, S.W.1; particulars can be obtained from the secretary, Miss H. M. Richards, at that address.

A GRANT of 75,000 dollars has been made to the Health Commissioner of New York to employ additional medical practitioners, nurses, and inspectors in connexion with an unusual number of scarlet fever cases in the city, and to take precautions against the possible recurrence of an epidemic of infantile paralysis, which usually runs in cycles of five or six years. In 1920 there were 6,885 cases of scarlet fever in New York, in 1921 there were 13,880. Part of the grant will be spent on the laboratory study of scarlet fever and infantile paralysis.

PROFESSOR CHAUFFARD has been elected vice-president of the Académie de Médecine for 1922.

THE lecture committee of the Boston (U.S.A.) Society of Natural History has reorganized itself into the Committee for the Protection of Animal Experimentation, and an appeal for funds signed by leading men of science in America has brought, it is stated, an encouraging response. The committee was formed to combat the activities of the various anti-vivisection societies in America, which were beginning to menace the health of the community; in California last year, for instance, a measure that threatened all animal experimentation was defeated with some difficulty.

DR. HENRI CLAUDE has recently been appointed professor of mental diseases in the Paris Faculty of Medicine in succession to the late Dr. Ernest Dupré.

THE University of Toronto has instituted a post-graduate course for a diploma in radiology. Candidates for the diploma are required to be graduates in medicine of a university recognized by the Senate, and must also have spent at least one year after graduation in a resident appointment at a recognized hospital. The curriculum for the diploma extends over eight months, and includes radiographic technique and interpretation, and gastro-intestinal examination.

A COURSE of five lectures dealing with recent researches on the accessory food factors will be given by Dr. S. S. Zilva at the Battersea Polytechnic, Battersea Park Road, S.W.11, on Thursdays, from 5.45 to 6.45 p.m., commencing on March 2nd. The fee for the course is 10s.

DR. G. O. C. MACKNESS of Broughty Ferry has, on the occasion of his retirement from practice, been presented by his friends and patients with a cheque for £700 as a mark of their esteem for his services to the community.

AMONGST the volumes announced for early publication by Messrs. J. and A. Churchill is *The Principles of Radiology*, by Dr. J. A. Crowther, University Lecturer at Cambridge in Physics Applied to Medical Radiology; it will contain fifty-five illustrations, and deals with the physical side of the subject. Messrs. Heinemann will shortly publish a book on anaesthetics in practice and theory, by Dr. Joseph Blomfield, O.B.E.

DURING the week ending February 18th the number of deaths from influenza showed a further decrease. In the 105 great towns the figures were 670 against 759 in the previous week. In London there were 17 fewer deaths from the disease than in the week ending February 11th (92 against 109). There was an increase in Liverpool (54 against 43). In Cardiff, Edinburgh, and Glasgow the number of deaths from influenza were 19, 24, and 28 respectively, against 27 in the first-named town and 48 in the latter two in the previous week. While in the aggregate of the 105 great towns there was an increase of 408 deaths from all causes, the deaths from influenza showed a decline of 89.

THE British Committee for Aiding Men of Letters and Science in Russia has received a letter from Professor Oldenburgh, Permanent Secretary of the Academy of Sciences, at Petrograd, stating that the books dispatched in ten cases from this country had been received and had been placed in a special reading room at the House of Savants. He expresses the deep gratitude of scientific workers in Petrograd for this stimulating intellectual aid. The British Committee considers that its work is now at an end. It received altogether £448. Out of the surplus it has spent £50 on books for the University of Latvia, and the small balance will be handed over to the Universities Committee of the Imperial War Relief Fund.

THE use of solutions of hypochlorites for the disinfection of water and to assist in the disinfection of clothes in the laundry is well known. Messrs. Vincent Roberts and Co., engineers of Leeds, have a machine which produces sodium hypochlorite by electrolysis and can be used wherever an electric current is available. They have issued a leaflet containing some reports from factories and institutions where their electrolyser has been used with success. In a note appended by the firm to these reports there is an error. "Disinfectants," it is stated, "only disguise unpleasant smells." The distinction is between disinfectants, antiseptics, and deodorizers. An effective disinfectant used in proper proportions destroys the organisms with which it is brought into contact, and this is what the hypochlorites do. Antiseptics inhibit bacterial growth and prevent decomposition. Deodorants merely oxidize or absorb malodorous products. Reference may be made on this point to *Hygiene and Public Health*, by Parkes and Kenwood (sixth edition).

IT is reported that the number of foreign medical students in France increased from 1,192 in 1920 to 1,555 in 1921.

THE idea of making all sizes of medicine bottles with the same size of neck (to fit an ordinary 6 oz. bottle cork) should prove exceedingly useful to the dispensing practitioner; such bottles are being made by the Medical Requisites Company, of 54, Deansgate, Manchester.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

TREATMENT OF TAENIASIS.

A CORRESPONDENT writes that a patient of his has been afflicted with a tapeworm (*Taenia saginata*) for the past six years, which has defied all attempts to remove it. Filix mas, pomegranate, and pelletierine have all been tried; only the first gives any satisfactory result, but the head has never been found. Our correspondent invites suggestions as to further treatment.

Some years ago Sir James Kingston Fowler described in our columns (April 14th, 1906, p. 841) a method of treatment which he had employed for some time with success. (1) The patient is kept in bed. (2) For two or three, or in some cases four, days the diet consists of: Beef-tea, 2 pints; Mason's essence, one tin; two rusks; and port wine 4 ounces. During the same period the patient takes tabloids of cascara sagrada (gr. ij) three times daily. (3) On the fourth day (usually) at 5 a.m. haustus sennae co. ℥j; at 9 a.m. a capsule containing ♏ xv of the extract of male fern; at 9.15 ditto; at 9.30 ditto; at 9.45 ditto; at 11 a.m. haustus sennae co. ℥j. If by 1 p.m. the worm has not been passed and the head found a second course of treatment with male fern at intervals of fifteen minutes is begun; to be followed in an hour by a purgative draught. If the head is not found a third course of treatment is prescribed. It is rarely advisable to continue the treatment beyond this without an interval of a day, as the patient may be somewhat exhausted.

INCOME TAX.

"K. R." asks how he should show the ownership of his residence by his wife on his income-tax form.

*** In making a declaration of *total* income the assessed value should be shown as income of the wife, and any payments from which tax is deductible should be detailed in the space provided on such declarations.

LETTERS, NOTES, ETC.

DR. EDGAR CYRIAX asks us to correct an error made by him in his letter published in the JOURNAL of February 11th, p. 247: Line 11–12 should read "which had been diagnosed as *influenza*," instead of "which had been diagnosed as scarlet fever."

THE TREATMENT OF PNEUMONIA WITH CREASOTE.

"M.D." writes: The treatment of pneumonia with a mixture containing 5 minims of creasote and 10 grains of potassium iodide in each dose, to be given every four hours, the dose of creasote to be increased if necessary, has been advocated on several occasions in the BRITISH MEDICAL JOURNAL. As the use of creasote may have fallen into disrepute, I would suggest that the large dose of potassium iodide—a drachm daily—may be a defect in the mixture, for in such large doses it probably acts only as a depressant. Given in doses of 2 to 3 grains it has a well marked expectorant action, and the addition of a stimulating expectorant such as aromatic spirit of ammonia, is advantageous. The prescription will then run as follows: Creasote ♏v; pot. iod. gr. ij; sp. ammon. aromat., sp. rectificat., ext. glycyrrhizae liquid., āā ʒss; aq. chloroformi ad ʒj; to be given every four hours. Probably not more than two ounces of brandy will be necessary in the twenty-four hours. The potassium iodide should be omitted in cases with profuse expectoration. I believe it is sometimes beneficial to remove the pillows and raise the foot of the bed, if the patient can bear it, by way of draining the bronchi and aiding the expulsion of the sputum.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

DR. RICHARD GILLBARD (Willesden Green) writes: The control of the Royal College of Surgeons by the Fellows has been discussed week after week in the lay press—a Sunday newspaper. I hazard a guess, therefore, it will not be debarred from a medical one. Apart from the suggestive comparison of the M.R.C.S. and F.R.C.S. with the B.A. and M.A. of Oxford and Cambridge Universities, the fact remains the F.R.C.S. men are a mere fraction of the College. It is a question of democratic control and the Members being masters in their own house—of the House of Lords being over the Commons, the peers above Pym, Pill, and Balfour. If the Members with these basic facts affronting them acquiesce in the *status quo* and government by the Fellows, it is not possible to afford sympathy. They deserve what they "are about to receive."

BIRTH CONTROL AND ABORTION.

DR. MARIE C. STOPES writes: As President of the Society for Constructive Birth Control and Racial Progress, may I register our committee's regret that in your otherwise excellent paragraph on abortion in Austria you have unfortunately headed it "'Birth Control' in Austria"? True, the words are in inverted commas, but we think it most deplorable that abortion should ever be referred to under the misnomer "Birth Control."

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 26, 27, 30, 31, 32, and 33 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 28 and 29.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
Each additional line	0 1 6
Whole single column (three columns to page) ...	7 10 0
Half single column	3 15 0
Half page	10 0 0
Whole page	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.